

HEALTH DEPARTMENT.

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REPORT

ON THE HEALTH OF THE

CITY OF LIVERPOOL

DURING

**1900,**

BY

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## PREFACE.

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In order that the statistics relating to population, births, deaths, causes of death, and incidence of disease should be as accurate as possible, the Report upon the health of the city has been deferred, in order that the results of the census should be available for these purposes. (See Appendix.)

All the figures relating to vital statistics are corrected by the census results.

The area of the city comprises 13,236 acres ( $20\frac{1}{2}$  square miles).

The estimated population of the city for this year is 680,628.

The total number of births was 22,762, giving a birth-rate of 33·4 per thousand of population, this being considerably above the average birth-rate of the great towns.

The total number of deaths was 15,785, and the death-rate (deducting 616 deaths of persons non-resident, but adding the deaths of residents reported to have died without the city) was 23·1. Liverpool is well provided with hospitals and charitable institutions, which attract the sick and destitute from all parts; in the weekly returns, many of the deaths of these persons are debited to Liverpool.

The appended plan-map shows at a glance the wide variation in birth-rates and death-rates, and other particulars in the different districts in the city; the highest birth-rate was in Scotland district, where it was 40·8, and the lowest was in Sefton Park district, where it was 20·4. The highest death-rate was in Exchange district, where it was 36·5, and the lowest was in Sefton Park district, where it was 10·7.

An exceptionally large proportion of deaths which take place in Liverpool occur in workhouses and hospitals: a fact which implies that a very large proportion of the inhabitants seek refuge in these establishments in times of sickness. (Pages 9 and 10.)



In dealing with death statistics, one fundamental fact must be fixed in the mind, and that is that quite apart from all circumstances and conditions affecting sanitation, the death-rate per 1,000 varies widely at different age periods. This fact is given due prominence to on page 7, and some of the features of infantile mortality are more fully dealt with on pages 12 to 15. If a death-rate of 100 per 1,000 may be regarded as a normal one amongst infants under 12 months, this rate is slightly exceeded in one district; it is more than doubled in another district; and is found to be five times as great amongst the infants of 1,082 families taken consecutively in the course of a special investigation. The prospects of life of infants of intemperate persons are small.

With regard to causes of death, there is a falling off in the mortality from some of the zymotic diseases, but an increase in others.

During the year there were as usual a considerable number of importations of small-pox (page 20). but the action taken in regard to this disease was sufficient to prevent any considerable extension.

Cases of Typhus fever have still further diminished, the number being fewer than has ever been known during one year in this city: the disease is held in check by sanitary precautions, and any relaxation of these precautions will be at once followed by an outbreak of Typhus fever amongst the drunken and dirty sections of the community. (Page 23.)

The record of Typhoid fever is also satisfactory, 731 cases being reported, against 988 in the preceding year, while the deaths were fewer by 62. (Page 25.)

The progressive decline in the number of cases of Scarlet fever is also a gratifying feature, and it is noteworthy that the proportion isolated in hospital continues high: this means that centres of infection are removed, and largely explains the diminution. (Page 27.)

When adequate hospital provision is found for Measles and Whooping cough, we may expect a steady diminution in them also, instead of the fluctuations which now occur. (Pages 29 and 31.)

The position in regard to Diphtheria is not satisfactory. The disease is a formidable and a fatal one, and larger provision in the hospitals should be made for it. (Page 33.)

A glance at the tables on pages 40, 41 and 42 will show in what direction progress has been most marked in regard to the suppression of infectious disease, including the tubercular diseases.

The position in regard to alcoholism is somewhat difficult to explain. In many directions there is unquestionably an improvement; there are certain localities, however, which show no sign of improvement, but on the contrary almost give the impression that, if anything, they are becoming worse. A feature which must sooner or later force itself upon public attention is the necessity for additional powers to ensure the more effectual protection of infants and young children whilst in the custody of drunken persons: that they suffer from direct violence and brutality no one will question, but they more frequently suffer from want of food and clothing, and from general neglect. (Pages 14 and 46.)

The details affecting general sanitary administration are dealt with from pages 51 onwards, and show the large amount and important character of the work thrown upon the sanitary staff.

Insanitary property has as usual engaged a considerable amount of time and attention of the district staff. It is gratifying to record the rate at which insanitary property is disappearing from the city, not less than 6,000 back-to-back houses having been taken down during the last ten years, more than half of which has been at the instance of the Insanitary Property (now Housing) Committee. No doubt these facts explain the large proportion which small cottages constitute of the new property which is being erected.

In this connection, the diminution of the offence of overcrowding, thanks to the supervision by the staff, is noteworthy, and the more stringent bye-laws in respect to this offence, which have recently been adopted, will still further lessen this evil. (See page 67.)

The prevalence of infectious disease in schools, notably Measles, caused some anxiety, and is dealt with somewhat fully on page 88 and following pages. The table on page 91 is important, as showing the result of school closure, a measure which is only had recourse to in extreme cases.

Amongst foodstuffs, the milk supply, as usual, has in all its details received a very careful attention. The association of Tuberculosis with this important food is dealt with on page 116.

The number of samples of food of different kinds taken for chemical analysis and bacteriological analysis during the year has been very large. Other questions affecting the work of the Health Committee have also been referred to the bacteriologist.

Numerous investigations have been made during the year upon sewage disposal, and the Sewage Farm at West Derby, with its experimental bacterial beds, has proved of service. The special beds in connection with the Fazakerley Fever Hospital are intended to sterilise the effluent after it has passed through the coke beds.

The municipal bacteriological work has benefited incidentally by the circumstance that numerous investigators, which the brilliant work of Dr. Ross has attracted to the Laboratories, have been engaged upon health problems of importance to Liverpool on account of its trade with the tropics.

The safeguarding the city from Plague occupied a great deal of attention during part of the year. A stock of Plague vaccine, made by Dr. Balfour Stewart, has always been kept ready, and it has been a matter of satisfaction that the Liverpool Laboratories have been able to supply it at a few hours' notice not only to several ports in this country in which cases of Plague have occurred, but also in very large quantities to the Colonial and War Offices.

In few directions is improvement more marked than in the cleansing and scavenging of the streets, more especially the main streets. No doubt this is partly owing to the substitution of electric cars for horse cars and omnibuses, but it is very largely contributed to by the improvements in the system of collecting and removing refuse. In some of the streets of smaller houses, great difficulties are encountered by the bad planning of the streets, and the absence of back passages of reasonable width. The proposal which is now being given effect to to substitute sanitary bins for the old ashpits in these districts will be attended with great benefit. (Page 159.)

The work of the hospitals has been of the utmost importance during the year. Pavilions were set aside for Plague or suspected Plague; but happily the occasion for their use was limited to the isolation of cases which ultimately proved to be other than Plague. (Pages 187-203.)



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# STATISTICS

•  
RELATING TO

BIRTHS, DEATHS, AND CAUSES OF DEATH, &c.,  
ZYMOTIC DISEASES AND THEIR INCIDENCE.

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## BIRTHS.

---

During the fifty-two weeks of the year 1900 (terminating on Saturday, December 29th, 1900) the returns of the local registrars recorded 22,762 births within the city. Of the total births 11,623 were males and 11,139 were females.

The birth-rate in the City of Liverpool is considerably above the average of the great towns. During 1900 the birth-rate was 33·4, which was the exact mean of the five years 1895-99. The rates are calculated upon the corrected population as ascertained by the Census of 1891 and 1901.

The variations in the birth-rate and the distribution of the births in the different wards and districts of the city, which together comprises 13,236 acres ( $20\frac{1}{2}$  square miles), are indicated upon the accompanying plan-map (see Appendix), and have also been arranged in the following tables:—

## BIRTHS.

DISTRICTS.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		1900.		Corrected Average Rate per 1000 during the 5 years 1895-1899.
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Births.	Rate per 1000	
Scotland .....	290	290	248	258	317	266	247	250	2166	40·8	39·6
Exchange .....	186	179	168	159	175	149	172	144	1332	31·4	30·5
Abereromby .....	247	201	208	190	223	212	175	177	1633	31·0	31·6
Everton .....	607	557	584	549	547	532	528	538	4442	36·7	36·9
Kirkdale .....	350	315	293	267	311	304	283	285	2408	34·8	35·0
West Derby—West .....	405	386	408	382	405	347	341	345	3019	35·1	36·3
Toxteth .....	463	451	423	411	418	412	410	441	3429	32·2	33·5
Walton .....	239	261	203	201	228	223	214	185	1754	32·9	32·2
West Derby - East .....	169	139	136	151	140	151	148	127	1161	26·9	24·9
Wavertree .....	90	102	90	97	99	121	110	111	820	33·9	25·8
Sefton Park .....	78	69	91	69	74	71	82	64	598	20·4	23·9
(late Toxteth Rural)											
City.....	3124	2950	2852	2734	2937	2788	2710	2667	22762	33·4	33·4

The birth-rate is still very high in the old parts of the city, in some instances higher than in the rapidly-extending areas in the suburbs. The high birth-rate amongst the poorer classes no doubt partially results from very early marriage.

The following table shows the population, number of births, and the corrected birth-rate per 1,000 during the last twenty-five years:—

Year.	Population.	No. of Births.	Rate per 1,000.
1876	521,544	20,426	39·2
1877	527,083	20,333	38·6
1878	532,681	20,612	38·7
1879	538,338	20,844	38·7
1880	544,056	20,783	38·2
1881	551,617	20,762	37·6
1882	548,065	20,498	37·4
1883	544,547	19,907	36·6
1884	541,031	20,071	37·1
1885	537,548	19,464	36·2
1886	534,088	19,559	36·6
1887	530,649	18,414	34·7
1888	527,233	17,777	33·7
1889	523,838	17,676	33·7
1890	520,466	17,592	33·8
1891	518,302	17,832	34·4
1892	519,590	17,758	34·2
1893	520,882	18,328	35·2
1894	522,178	17,893	34·3
*1895	*652,523	*22,006	*33·7
1896	658,050	21,943	33·3
1897	663,633	22,280	33·6
1898	669,243	22,227	33·2
1899	674,912	22,488	33·3
1900	680,628	22,762	33·4

\* City area extended.

The following table shows the *Natural* increase or decrease of population, that is, the increase or decrease in the number of births over deaths during the year 1900, in the several districts of the City :—

DISTRICTS.							Births.	Deaths.	Number of Births over Deaths.	Number of Deaths over Births.
Scotland	...	...	...	...	...	...	2,166	1,830	336	—
Exchange	...	...	...	...	...	...	1,332	1,549	—	217
Abercromby	...	...	...	...	...	...	1,633	1,303	330	—
Everton	...	...	...	...	...	...	4,442	2,896	1,546	—
Kirkdale	...	...	...	...	...	...	2,408	1,552	856	—
West Derby—West	...	...	...	...	...	...	3,019	1,836	1,183	—
Toxteth	...	...	...	...	...	...	3,429	2,496	933	—
Walton	...	...	...	...	...	...	1,754	855	899	—
West Derby—East	...	...	...	...	...	...	1,161	749	412	—
Wavertree	...	...	...	...	...	...	820	396	424	—
Sefton Park (late Toxteth Rural)	...	...	...	...	...	...	598	315	283	—
City	...	...	...	...	...	...	22,762	15,777	6,985	—
Hospitals (Residences outside City)	...	...	...	...	...	...	—	616	—	—
Total	...	...	...	...	...	...	22,762	16,393	6,369	—

In only one district, viz., Exchange, is any decrease shown; the nett result in the City showing an increase of births over deaths of 6,369.



DEATHS.

The most interesting, as well as the most important statistics are those dealing with mortality and its causes. These are set forth in the ensuing pages; the total death-rate of the city during the year was 23·1 per 1,000, which is the exact average rate during the six years (1895-1900) since the extension of the city boundaries.

Quite apart from conditions of sanitation, mortality varies widely at different age-periods; consequently the death-rate of the community is largely influenced by the proportions living at each age-period; the effect of a high birth-rate is considerable, in raising the crude death-rate.

The following table shows the annual rate of mortality per 1,000 at each of twelve age-periods during last year in Liverpool, as well as the total number of deaths. The differences which the figures show are very striking:—

1900.	Under 1 year.	1 to 2	2 to 5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 and upwards.	Total at all Ages.
Rate of Mortality per 1,000 living at ages indi- cated.	224·8	72·7	19·4	5·3	3·2	6·4	12·7	21·1	37·8	68·0	107·7	213·7	23·1
Total Number of Deaths at each Age Period ...	4202	1184	962	419	457	778	1225	1529	1770	1766	1098	387	1577

If, for example, we could conceive that the whole population of Liverpool consisted of persons between the ages of 20 and 30, the death-rate last year would have been 6·4 per 1,000; if, on the other hand, we could conceive that it consisted entirely of people under 1 year of age, the death-rate would be about 224·8 per 1,000, and if above 60 years, 85·6 per 1,000. It is plain that any variations in the *proportions* living at the respective age periods would affect the death-rate, and this with absolutely no change whatever in the condition of municipal sanitation.

The deaths in public institutions of 616 non-residents, equal to 0·9 per 1,000, have been eliminated from the table.



The following table gives the total number of deaths allocated to each district:—

DISTRICTS.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.		Annual.
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Deaths.
Scotland .....	267	285	229	210	235	208	207	189	1830
Exchange .....	281	234	209	158	174	176	180	137	1549
Abercromby .....	227	211	170	143	164	146	134	108	1303
Everton .....	447	433	366	338	347	365	320	280	2896
Kirkdale .....	214	219	176	152	204	209	192	186	1552
West Derby (West)..	259	302	235	239	221	199	170	211	1836
Toxteth .....	368	377	294	345	284	310	243	275	2496
Walton.....	114	137	97	105	111	115	90	86	855
West Derby (East)...	109	114	90	99	89	78	93	77	749
Wavertree .....	66	55	57	45	37	41	39	56	396
Sefton Park .....	41	61	38	38	30	40	33	34	315
(late Toxteth Rural)									
Deaths of Non-Resi- dents of the City in Workhouses and Hospitals .....	99	73	115	69	73	52	89	46	616
Total Deaths in City	2492	2501	2076	1941	1969	1939	1790	1685	16,393

DEATHS IN PUBLIC INSTITUTIONS.

Deaths in Public Institutions are referred to the Wards from whence the patients came, but the following table shows that the deaths of 4,257 persons occurred in the undermentioned Institutions for the treatment of the sick:—

					Total Deaths.	Non-Residents of City.
Parish Workhouse	...	...	...	...	1,371	90
Royal Infirmary	...	...	...	...	275	86
Children's Infirmary	...	...	...	...	89	11
Lying-in Hospital	...	...	...	...	7	1
Consumption Hospital	...	...	...	...	18	4
Hahnemann Hospital	...	...	...	...	22	3
Northern Hospital	...	...	...	...	165	31
Stanley Hospital	...	...	...	...	118	16
Royal Southern Hospital	...	...	...	...	192	37
Mill Road Infirmary	...	...	...	...	589	85
Hospital for Women	...	...	...	...	23	11
City Hospital North	...	...	...	...	93	4
Do. South	...	...	...	...	76	1
Do. Parkhill	...	...	...	...	41	2
Do East, Mill Lane	...	...	...	...	28	—
Do. Priory Road	...	...	...	...	17	4
Walton Workhouse	...	...	...	...	607	137
Belmont Road Workhouse	...	...	...	...	57	23
St. Joseph's Home	...	...	...	...	43	28
Toxteth Workhouse	...	...	...	...	321	13
Home for Incurables	...	...	...	...	7	4
Turner Memorial Home	...	...	...	...	9	1
St. Augustine's Home	...	...	...	...	14	3
Kirkdale Home	...	...	...	...	26	1
Walton Gaol	...	...	...	...	13	10
Other Public Institutions	...	...	...	...	36	10
					4,257	616

From the returns made as to the residences of these persons 3,641 of the deaths in these establishments are classified in the districts from whence the patients were removed, viz.:—517 under Scotland district,

622 under Exchange district, 438 under Abercromby district, 595 under Everton, 283 under Kirkdale, 361 under West Derby (west), 495 under Toxteth, 136 under Walton, 117 under West Derby (east), 45 under Wavertree, and 32 under Sefton Park (late Toxteth rural); 424 were non-residents, who had sought relief in Liverpool Institutions, and the remainder, 192 were waifs, strangers to the city, whose previous residences were unknown.

It is noteworthy that in Liverpool the proportion of deaths which take place in Public Institutions is larger than is the case in other towns, and the fact is an interesting one, as something may be learned of the social conditions of a locality when so large a proportion in times of sickness seek refuge in public institutions, more especially in the workhouses. Generally it implies poverty and want; but on the other hand it may also, and no doubt does, imply that the institutions have a wide reputation, and attract sufferers to them not only from within the city, but from a distance. Probably both of these conditions exercise influence, but be that as it may, the fact remains that there is no provincial city in which so large a proportion of the deaths take place in workhouses and hospitals.

The following table shows the percentage of deaths which have occurred in public institutions during the 5 years, 1896-1900, in the great towns of Birmingham, Leeds, Manchester and Liverpool:—

	1896.	1897.	1898.	1899.	1900.	Average.
Birmingham .....	14·9	14·0	15·3	16·1	20·4	16·1
Leeds .....	11·9	10·8	11·8	12·4	12·5	11·9
Manchester .....	19·7	20·0	19·0	19·7	21·9	20·1
Liverpool .....	23·8	23·1	24·7	25·3	25·9	24·6

The results of the allocation of deaths in public institutions to the districts from whence the patients had been removed, and the addition

of these to the number of deaths of residents in those various districts, are shown in the following table, from which a calculated rate of mortality per 1,000 per annum of the inhabitants has been made. The rates are calculated upon the corrected population as ascertained by the Census of 1891 and 1901.

DISTRICTS.	Population.	1900.		Corrected Average Rate per 1000 during the five years 1895-1899.
		Deaths.	Rate per 1000	
Scotland ... ..	53,049	1,830	34·5	33·2
Exchange ... ..	42,405	1,549	36·5	35·4
Abercromby ... ..	52,645	1,303	24·7	23·2
Everton... ..	120,904	2,896	23·9	24·7
Kirkdale ... ..	69,132	1,552	22·4	21·8
West Derby (West) ... ..	85,924	1,836	21·4	21·8
Toxteth ... ..	106,393	2,496	23·4	23·1
Walton ... ..	53,376	855	16·0	15·9
West Derby (East) ... ..	43,245	749	17·3	16·7
Wavertree ... ..	24,174	396	16·4	13·8
Sefton Park ... .. (late Toxteth Rural)	29,381	315	10·7	12·0
City ... ..	680,628	15,777	23·1	23·1

The District Registrars' Returns show that there were 30 deaths (21 of women and 9 of men) at the age of 90 and upwards, viz., 2 males and 8 females at 90, 3 males and 4 females at 91, 2 males and 4 females at 92, 1 male and 2 females at 93, 1 female at 94, 1 female at 95, 1 female at 96, and 1 male at 102.

The death-rate per 1,000 for 1900 in each of the districts of the city is indicated upon the appended map. Scotland and Exchange districts, it must be remembered, contain a great number of common lodging-houses, some of which are resorted to by non-residents of the districts, persons of very migratory habits, and often indigent and broken down. This class tends to swell the mortality of these two districts.



INFANTILE MORTALITY.

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The term "infant" is restricted to twelve months of age. It will be seen from the tables, or perhaps more readily from the plan-map appended, that the loss of infant life in the various districts of the City varies widely, the range being from 105 per 1,000 in the district where it is the lowest, up to 260 in the district where it is the highest. Even in the lowest, the death-rate of infants is nearly five times as high as the general death-rate of the community.

The high mortality amongst infants, however good their surroundings, and however intelligently maternal care is exercised, arises from many causes: a certain proportion are premature, and cannot all survive, some are born with malformations and other defects which soon terminate their existence; others, the offspring of weakly parents, cannot long survive, and in spite of all care, there is a large proportion who will succumb to one or other of the many ailments to which infancy is susceptible. Making due allowance for these, it may be taken that an annual death-rate amongst infants, of 100 per thousand, is unavoidable, and if this be granted, it follows that anything above this is preventable, although the necessary means to prevent it are so extremely difficult to apply that even in the best districts the loss of infant life is in excess of the standard. In the poorer districts it is plain to the most casual observer that necessary care and attention are not given to infants: nothing is more common than to see the infant handed over to the custody of children or irresponsible persons, whilst the responsible guardians are either at work or engaged in some other occupation. The children of the very poor are in this way exposed to neglect and inattention which is practically unavoidable, and which, together with improper food and scanty clothing, is reflected in the sacrifice of life.

A much closer differentiation, however, is possible in each district than is indicated by these broad distinctions. Thus, in the districts of highest mortality, whilst there are instances in abundance of families in which every child has been reared, there are examples, far too numerous, in which all, or nearly all, of the children have perished in infancy, or before attaining to the age of five years.



In the course of an inquiry into infantile mortality, 1,082 families in which the death of an infant had occurred, were taken consecutively, and certain particulars concerning them ascertained. The total number of children born in these families had been 4,574, but out of that number 2,229 had died, practically all in infancy, representing 487 deaths out of every 1,000 born, a waste of life nearly five times as great as the standard alluded to. But the most remarkable series of excessive fatality occurred in twelve families in which the large total of 117 infants had been born, and no less than 98 had perished in infancy. These extreme examples, it must be remembered, are occurring in families in which, so far as municipal sanitation is concerned, there is very little to choose between them and many of the families who rear all, or nearly all, their children, nor can it be shown or inferred that there was any inherent weakness in the offspring, since those who have survived are of fair physique, not, as a class, suffering under any inherited condition likely to terminate their lives; but it is in the personal and domestic circumstances that the contrasts are most marked.

As regards the nature of the illness to which death is most commonly ascribed, it must be borne in mind that the obscurity of symptoms of illness in infants and young children often leaves a doubt as to which of two or more causes was the primary one. However during the year 1900 the total number of deaths of infants under one year of age was 4,247, developmental diseases accounted for 1,151, premature birth being answerable for 461, and atrophy for 628; general experience justifies the assumption that the atrophy owed its origin in a very large proportion of cases to want of proper feeding. The group next in numerical importance is the zymotic group, to which 1,003 deaths were ascribed, the great majority of them, viz., 667, being due to diarrhœa, the exciting cause being no doubt the same as that in the case of atrophy. Following upon this comes whooping-cough with 205 deaths, measles with 26 deaths. Under the heading, "Diseases of the digestive system," no less than 433 deaths of infants are recorded.

A careful investigation has been made into the circumstances of upwards of 1,000 consecutive deaths in districts where infantile mortality was excessive. In 21 per cent. the families may be described as extremely and exceptionally dirty, in 18 per cent. the mothers went out to work, leaving the infant in the custody of others, frequently in

the custody of another child, who could give it no proper attention. About 11 per cent. of the total were living in dwellings unfit for human habitation. In upwards of 25 per cent., and these are the cases where the mortality appears to be highest, the parents are markedly intemperate. Upon this question it hardly needs to be pointed out that if the rearing of young infants requires care, and extreme care, the prospects of life of the infant are poor if the drunkenness of the mother results in its starvation and neglect during the bouts of drunkenness, and they are still poorer when, in addition, injury results from exposure, or from tumbles in the street when the woman, with the child in her arms, is too drunk to stagger along without falling; but direct violence and brutality too often force themselves into prominence to be left out of consideration; one unhappy creature, when drunkenness reached the climax of insanity, destroyed her infant by pouring boiling water upon it.

The extreme suffering inflicted upon the young by drunkenness, and the loss of life resulting from it, are the saddest features of city squalor, and are beyond the power of sanitation to ameliorate.

Always remembering that the natural guardian of the infant is the mother, and that it is only with extreme caution that the efforts of the municipality can be specially directed to the preservation of infant life, many matters present themselves in which action of the municipality cannot be other than beneficial.

It is necessary that some hospital provision should be made for infants suffering from whooping-cough, and in which they could be received together with the mother, or other natural guardian of the child, if necessary. With regard to feeding, there is strong evidence that the efforts of the Health Committee in widely circulating instructions as to the feeding of infants, in employing a large staff to give verbal instructions and to supervise, in establishing a sterilised milk depôt at which milk specially prepared for infants can be obtained, in improving the general sanitation of slums, scavenging, &c., have resulted in marked benefit. The great difficulty which is encountered in some towns, owing to the fact that the work of the mother necessitates that the infant should be left often in incompetent hands, is not of relatively frequent occurrence in this City.

The following table indicates the incidence of infantile mortality in the various wards of the City, and during different seasons, also the proportion of deaths under five years to the total deaths.

DISTRICTS.	Quarters.				Total Deaths.	Deaths under 5 years of age.	Per Cent- age of Deaths under 5 years to Total Deaths.	Per Cent- age of Deaths under 1 year to Total Births.
	March.	June	Sept.	Dec.				
Scotland .....	224	157	254	189	1,830	824	45·0	24·1
Exchange .....	170	101	145	112	1,549	528	34·0	26·0
Abercromby .....	98	92	114	65	1,303	369	28·3	15·4
Everton .....	367	268	394	270	2,896	1,299	44·8	19·0
Kirkdale .....	137	138	221	197	1,552	693	44·6	19·5
West Derby (West).	196	179	230	139	1,836	744	40·5	16·8
Toxteth .....	268	255	311	215	2,496	1,049	42·0	19·9
Walton .....	99	67	120	74	855	360	42·1	14·0
West Derby (East) .	57	57	72	53	749	239	31·9	13·4
Wavertree .....	40	42	36	45	396	163	41·1	14·0
Sefton Park .....	23	21	24	14	315	82	26·0	10·5
(late Toxteth Rural)								
Workhouses & Hos- pitals (Residences outside City) .....	18	23	16	10	616	67	10·8	...
City .....	1,697	1,400	1,937	1,383	16,393	6,417	39·1	18·6

Inquests were held on the bodies of 113 infants, under 12 months of age, who had been suffocated.

Deaths in Public Institutions are transferred to the Districts from whence the patients came.



The proportion which the deaths of children under five years of age has borne to the total deaths in the various districts of the City during the last five years, follows. Also the proportion of deaths of infants under one to every hundred births.

DISTRICTS.	1896.		1897.		1898.		1899.		1900.	
	Percentage of Deaths under 5 years to Total Deaths.	Percentage of Deaths under 1 year to Total Births.	Percentage of Deaths under 5 years to Total Deaths.	Percentage of Deaths under 1 year to Total Births.	Percentage of Deaths under 5 years to Total Deaths.	Percentage of Deaths under 1 year to Total Births.	Percentage of Deaths under 5 years to Total Deaths.	Percentage of Deaths under 1 year to Total Births.	Percentage of Deaths under 5 years to Total Deaths.	Percentage of Deaths under 1 year to Total Births.
Scotland .....	47·8	22·2	48·4	24·2	50·4	23·8	49·9	25·1	45·0	24·1
Exchange .....	37·8	23·7	41·4	28·2	37·8	26·6	34·9	27·4	34·0	26·0
Abercromby .....	36·1	13·2	35·2	14·6	33·4	16·1	30·6	14·5	28·3	15·4
Everton .....	47·5	18·5	49·6	21·0	46·8	19·4	46·2	21·0	44·8	19·0
Kirkdale .....	47·3	17·4	46·1	19·3	46·4	17·5	44·7	18·8	44·6	19·5
West Derby (West) .....	44·2	16·8	48·9	18·9	45·5	17·7	42·1	18·8	40·5	16·8
Toxteth.....	41·4	16·2	48·2	20·9	43·5	18·3	43·4	20·4	42·0	19·9
Walton .....	42·3	13·4	44·3	15·3	42·2	12·5	47·0	16·5	42·1	14·0
West Derby (East).....	39·4	17·5	37·6	18·4	30·7	13·9	37·1	16·6	31·9	13·4
Wavertree .....	43·8	13·9	45·9	17·1	46·4	16·8	45·7	16·4	41·1	14·0
Sefton Park .....	33·4	10·4	36·3	14·4	37·0	12·2	34·8	13·6	36·0	10·5
(late Toxteth Rural)										
Workhouse and Hospitals (Residences outside of City)	12·5	...	12·6	...	10·2	...	8·6	...	10·8	...
City .....	41·9	17·5	44·7	20·1	42·1	18·4	42·0	19·9	39·1	18·6

## CAUSES OF DEATH.

The following table gives a classification of the causes of death during the four quarters of the year, grouped under 16 classes.

Full details as to the causes of death are set forth in table *F* in the Appendix; in this table the age at which each death took place and the district in which it occurred will also be found.

CLASSES.	QUARTERS.				YEAR 1900.
	March	June.	Sept.	Dec.	
1. Zymotic and Septic Diseases .....	653	443	979	416	2,491
2. Diseases of Uncertain or Variable Seat.....	146	162	130	152	590
3. Constitutional Diseases.....	32	35	30	46	143
4. Tubercular Diseases .....	485	487	371	374	1,717
5. Diseases of the Nervous System .....	488	442	428	403	1,761
6. „ „ Circulatory „ .....	336	317	264	247	1,164
7. „ „ Respiratory „ .....	1,585	1,035	536	706	3,862
8. „ „ Digestive „ .....	286	245	389	273	1,193
9. „ „ Lymphatic „ .....	4	5	4	10	23
10. „ „ Urinary „ .....	112	109	92	101	414
11. „ „ Re-productive „ .....	32	19	20	17	88
12. „ „ Joints, &c. ....	8	4	9	5	26
13. „ „ Integumentary System .....	13	8	10	13	44
14. Dietetic Diseases.....	1	11	6	4	22
15. Developmental Diseases .....	530	448	434	447	1,859
16. Causes investigated at Coroner's Inquests ...	275	237	202	243	957
Causes not specified .....	7	10	4	18	39
All Causes .....	4,993	4,017	3,908	3,475	16,393



## ZYMOTICS.

This class of disease is one calling for special attention, and is dealt with in some detail in the following tables, the first of which shows the localities and the periods of the fatal prevalence of Zymotic diseases during 1900:—

DISTRICTS.	Deaths from all causes.	ZYMOTICS.				
		Quarters.				Per Centage of Zymotic Deaths to Deaths from all causes.
		March.	June.	Sept.	Dec.	
Scotland.....	1,830	73	52	144	58	17·8
Exchange .....	1,549	73	26	66	26	12·3
Abercromby .....	1,303	38	22	42	25	9·7
Everton .....	2,896	140	83	185	94	17·3
Kirkdale .....	1,552	46	44	131	53	17·6
West Derby (West).....	1,836	89	63	114	41	16·7
Toxteth .....	2,496	90	78	153	55	15·0
Walton .....	855	42	20	67	32	18·8
West Derby (East) .....	749	24	23	35	10	12·2
Wavertree .....	396	13	11	26	10	15·1
Sefton Park .....	315	10	4	10	5	9·2
(late Toxteth Rural)						
Workhouses and Hospitals (Residences outside City) .....	616	15	17	6	7	7·3
City .....	16,393	653	443	979	416	15·1

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

Zymotic diseases occasioned 2,491 deaths during the year 1900, and accounted for 15·1 per cent. of the total mortality within the City during this period. The death-rate from zymotic diseases per 1,000 was 3·6. The deaths were as follows :—

	QUARTERS.				YEAR 1900.
	March.	June.	Sept.	Dec.	
Total Zymotics .....	653	443	979	416	2,491
Smallpox .....	2	14	7	—	23
Measles .....	41	18	26	65	150
Scarlatina .....	38	22	16	37	113
Diphtheria .....	43	30	26	44	143
Membranous Croup .....	6	4	2	8	20
Whooping-cough .....	221	186	95	36	538
Diarrhœa .....	39	43	696	122	900
Influenza .....	176	48	8	16	248
Fever {	Typhus .....	—	5	5	11
	Typhoid .....	26	26	29	120
	Simple Continued .....	—	1	—	4
Other Zymotics.....	61	46	69	45	221

NOTE.—Influenza, Measles, and Whooping-cough appear to have been predisposing causes in the case of many deaths primarily ascribed to Systemic Disease (page 17), inasmuch as one or other of these Zymotics had preceded the fatal illness. See also notes to succeeding tables.

SMALLPOX.

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Smallpox was imported into the City from abroad on eight occasions, the most important being that of the ss. "New England," which arrived with 19 cases on board. (See Report to Port Sanitary Authority, 1900). The ss. "Nubia" brought two cases, and five other vessels each brought one case. In the eighth case the disease was in an incipient stage, and was not recognised until after the patient reached home. In each case every possible precaution was taken to prevent any extension of the disease by isolation of the infected persons, disinfection of the infected clothing, houses, &c., and revaccination of those who had been exposed to infection, and daily visitation for 14 days to infected houses, to inquire if any further sickness of any kind has arisen. (See page 93).

Including the imported cases there was a total number of 156 cases notined, and 154 of these were isolated in hospital. There were 23 deaths during the year.

Of the fatal cases 13 were unvaccinated, 9 were imperfectly vaccinated, and one vaccinated.

The experiences of these cases fully confirm the paragraph in the Report of the Royal Commission on Vaccination which states:—"The beneficial effects of vaccination are most experienced by those in whose case it has been most thorough. We think it may fairly be concluded that where the vaccine matter is inserted in three or four places it is more effectual than when introduced into one or two places only."

SMALLPOX.

The next tables show the incidence of smallpox in regard to season and locality, and the ages at death of the fatal cases.

DISTRICTS.	QUARTERS.								YEAR.		
	March.		June.		Sept.		Dec.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Scotland.....	...	1	1	...	...	...	...	...	1	1	2
Exchange .....	...	...	...	...	...	...	...	...	...	...	...
Abercomby.....	...	...	...	1	1	...	...	...	1	1	2
Everton .....	...	...	...	...	...	...	...	...	...	...	...
Kirkdale.....	...	...	2	...	...	...	...	...	2	...	2
West Derby (West) .....	...	...	...	...	1	...	...	...	1	...	1
Toxteth .....	...	...	...	...	...	1	...	...	...	1	1
Walton .....	...	...	1	4	2	...	...	...	4	3	7
West Derby (East) .....	...	...	...	...	1	...	...	...	1	...	1
Wavertree .....	...	...	...	...	...	...	...	...	...	...	...
Sefton Park .....	...	...	...	...	...	1	...	...	...	1	1
(late Toxteth Rural).											
Hospitals (Residences outside the City)	1	...	2	3	...	...	...	...	3	3	6
City.....	1	1	6	8	5	2	...	...	13	10	23

AGES AT DEATH.													
Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	60—	All Ages.
1	...	1	...	1	2	...	2	6	5	...	4	1	23

Deaths in Public Institutions are transferred to the Districts from whence the patients came.



## SMALL-POX DURING THE LAST THIRTY-EIGHT YEARS.

Years of Increase.	No of Cases.	Deaths.	Years of Subsidence.	No of Cases.	Deaths.
1863	Unrecorded	100			
1864	„	482			
1865	„	459			
1866	„	102			
			1867	Unrecorded	22
			1868	„	18
			1869	„	20
1870	„	174			
1871	„	1,919			
1872	„	50			
			1873	„	10
			1874	„	30
			1875	„	29
1876	„	386			
1877	1,660	299			
			1878	35	3
			1879	12	...
			1880	14	2
			1881	262	34
			1882	67	6
			1883	126	26
1884	832	106			
			1885	375	46
			1886	234	29
			1887	23	1
			1888	27	1
			1889	9	1
			1890	2	...
			1891	21	2
			1892	177	13
			1893	75	9
			1894	229	20
			1895	130	12
			1896	8	...
			1897	6	..
			1898	17	2
			1899	10	1
			1900	156	23

## TYPHUS FEVER.

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Cases of typhus have gradually diminished as sanitary administration has become more precise, and during 1900 the number of cases (42) was fewer than in any preceding year.

The disease is particularly liable to spread amongst dirty, ill-fed, and intemperate persons, and incessant watchfulness is necessary in order to hold it in check.

Of the total number of 42, 11, as the table shows, resulted fatally.

AGES AT DEATH.											
Under 1 year.	1—	2—	5—	10—	15—	20 —	30—	40 —	50—	60 & up- wards.	All Ages.
—	—	1	1	2	1	1	2	3	—	—	11

The deaths occurred chiefly between 15 and 45 years of age, this disease being particularly fatal to adults.

Reports for preceding years sufficiently illustrate the importance of the daily visits which are made to houses which have been infected with typhus, as well as the importance of keeping under supervision every person who is known to have been in contact with the patient. It is not necessary to allude to this at present, further than to say that none of the stringent measures which have been adopted against typhus are in any way relaxed.

List of streets in the city where cases of TYPHUS FEVER occurred  
during the year 1900.

STREETS.	Cases.	Deaths.	STREETS.	Cases.	Deaths.
Alt .....	1	...	Northumberland .....	5	1
Bentinck .....	1	1	Park Street.....	1	...
Devonshire .....	1	1	Richmond Row .....	1	...
Eastwood .....	1	...	Saltney .....	1	1
Grafton .....	1	...	Sandys .....	1	...
Gregson .....	1	...	Stanley Hospital .....	1	...
Iden Place .....	1	1	(inmate)		
Luton .....	4	...	Ship .....	2	...
Mann .....	5	2	Upper Essex .....	6	1
Markham .....	1	...	Upper Harrington.....	1	1
Mill .....	2	1	White .....	3	1
			Wolfe .....	1	...

## TYPHOID FEVER.

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There is a satisfactory diminution to record in the number of cases of Typhoid Fever during the year, viz., 731, against 988 in the preceding year, and the deaths were fewer by 62.

These figures are considerably below the average of the last five years. Seasonal influences were no doubt such as to tend to a lessening of diarrhœal and typhoid forms of disease, but the influence of improved sanitation in various directions is beyond question.

Upwards of 63 per cent. of the total number of cases notified during the year were removed to hospital. (See page 189).

The following table gives the ages at death of the fatal cases:—

AGES AT DEATH.											
Under 1 year.	1—	2—	5—	10—	15—	20—	30	40—	50—	60 & up- wards.	All Ages.
—	1	4	4	7	19	33	32	10	7	3	120



Table showing the locality and season, of deaths from Typhus Fever, Typhoid Fever, and the obscure form of disease known as Continued Fever during the year 1900. Under this latter name, four deaths were registered, the same number as last year, and the average of the last five years. (See also page 47).

DISTRICTS.	1st Quarter.				2nd Quarter.				3rd Quarter.				4th Quarter.				YEAR.			
	Typhus.	Typhoid.	Simple Continued.	Total.	Typhus.	Typhoid.	Simple Continued.	Total.	Typhus.	Typhoid.	Simple Continued.	Total.	Typhus.	Typhoid.	Simple Continued.	Total.	Typhus.	Typhoid.	Simple Continued.	TOTAL.
Scotland.....	—	—	—	—	1	1	—	2	1	3	—	4	—	4	—	5	2	8	1	11
Exchange .....	—	2	—	2	—	—	—	—	—	—	—	—	4	4	—	4	—	6	—	6
Abercromby .....	—	5	—	5	—	2	—	2	1	3	—	4	—	4	—	4	1	14	—	15
Everton .....	—	5	—	5	—	4	—	4	—	6	—	6	—	5	—	6	—	20	1	21
Kirkdale.....	—	—	—	—	—	—	—	—	—	5	—	5	—	3	—	3	—	8	—	8
West Derby (West) .....	—	2	—	2	—	3	—	3	—	3	—	3	—	1	—	4	1	11	—	12
Toxteth .....	—	8	—	8	4	3	—	7	3	3	—	6	—	3	—	4	7	17	1	25
Walton .....	—	2	—	2	—	3	—	3	—	2	—	2	—	—	—	6	—	13	—	13
West Derby (East) .....	—	—	—	—	—	6	—	6	—	3	—	3	—	2	—	2	—	11	—	11
Wavertree .....	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	1	—	1
Sefton Park .....	—	1	—	1	—	—	1	1	—	—	—	—	—	1	—	1	—	2	1	3
(late Toxteth Rural)																				
Hospitals (Residences out of City) ...	—	1	—	1	—	3	—	3	—	1	—	1	—	4	—	4	—	9	—	9
TOTAL FOR WHOLE CITY ...	—	26	—	26	5	26	1	32	5	29	—	34	1	39	3	43	11	120	4	135

In arranging this table, all deaths occurring in hospitals have been transferred to the districts from whence the patients came.

SCARLATINA.

---

The reduction in the number of cases of this disease which had been noted in the preceding year was still more marked in 1900, the number notified showing a decrease of 448 cases. Isolation in hospital was found desirable in 60·8 per cent. of the cases, and out of a total of 1,968 cases reported 1,198 were removed to hospital, showing a proportion of cases isolated about 2 per cent. lower than in 1899. The percentage of the total number of scarlet fever patients removed to hospital during each of the preceding five years has been as follows:—38·3, 44·3, 54·6, 60·5 and 63·6. This public appreciation of the value of isolation is noteworthy.

The mortality from the disease reached 5·7 per cent, the great majority of the deaths being below five years of age. (See table, page 28).

The progressive decline in the number of deaths from Scarlatina during recent years is very gratifying. Five and twenty years ago there were as many deaths from Scarlet Fever as there were cases in 1900.

DEATHS FROM SCARLATINA.

DISTRICTS.	QUARTERS.								YEAR.			
	March.		June.		Sept.		Dec.					
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total	
Scotland .....	3	...	2	3	...	1	2	1	7	5	12	
Exchange .....	2	...	1	1	1	...	1	...	5	1	6	
Abercromby .....	...	1	...	...	...	...	1	...	1	1	2	
Everton .....	12	9	3	3	...	2	4	6	19	20	39	
Kirkdale .....	2	1	2	2	1	1	3	1	8	5	13	
West Derby (West) .....	1	2	1	1	2	...	3	3	7	6	13	
Toxteth .....	1	...	...	...	2	3	3	5	6	8	14	
Walton .....	2	...	...	...	1	1	1	1	4	2	6	
West Derby (East) .....	...	...	...	...	...	...	...	1	...	1	1	
Wavertree .....	...	...	1	1	...	1	...	...	1	2	3	
Sefton Park .....	...	2	...	...	...	...	...	...	...	2	2	
(late Toxteth Rural)												
Hospitals (Residences outside the City) .....	...	...	...	1	...	...	1	...	1	1	2	
City .....	23	15	10	12	7	9	19	18	59	54	113	
AGES AT DEATH.												
Under 1 year.	1—	2—	3—	4—	5 -	10—	15—	20—	30—	40—	50—	All Ages.
3	14	21	16	23	26	7	2	1	...	...	...	113

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

MEASLES.

---

Measles showed a marked diminution as compared with the preceding year, the cases reported reaching 2,372, as against 5,107 in 1899. There were 150 deaths directly ascribed to it, the great majority of them being of infants below 3 years of age.

The number of deaths does not fully indicate the destruction of life due to measles, since this disease is commonly associated with bronchitis and pneumonia, and it is beyond any question that deaths primarily due to measles are entered in the returns as due to pulmonary disease.

During the year, with a view to prevent extension of measles, school closure was resorted to with very gratifying results. (See page 92.) The isolation of the infectious sick in hospital is important and necessary. No provision of hospital accommodation except for a very limited number of cases has yet been made for measles, and the deaths from measles show no decline comparable to that which has taken place in the forms of infectious disease for which hospital accommodation is available. In the great number of homes in which measles occurs isolation in the house is difficult or impossible. In making arrangements for hospital isolation of measles, difficulties of a special kind will arise owing to the tender age of the patient, and the peculiarities of the infection in this form of disease.



The following table shows the periods of the year and the localities in which deaths from Measles occurred, and also the ages at death.

The number of deaths from Measles during each of the six years, 1895-1900, has been as follows:—398, 312, 344, 283, 321 and 150.

DISTRICTS.	QUARTERS.								YEAR.		
	March.		June.		Sept.		Dec.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Scotland .....	5	2	...	...	1	3	3	2	9	7	16
Exchange .....	...	2	...	...	2	4	1	1	3	7	10
Abercromby .....	...	3	...	...	1	...	...	2	1	5	6
Everton .....	4	2	1	...	1	3	11	5	17	10	27
Kirkdale .....	3	1	1	...	1	2	9	9	14	12	26
West Derby (West) .....	5	7	...	...	...	...	2	3	7	10	17
Toxteth .....	2	...	6	5	1	3	1	...	10	8	18
Walton .....	...	...	1	...	2	1	7	7	10	8	18
West Derby (East).....	1	...	...	1	1	...	...	...	2	1	3
Wavertree .....	1	...	...	...	...	...	...	2	1	2	3
Sefton Park..... (late Toxteth Rural)	1	...	...	...	...	...	...	...	1	...	1
Hospitals (Residences outside the City) .....	1	1	2	1	...	...	...	...	3	2	5
City .....	23	18	11	7	10	16	34	31	78	72	150

AGES AT DEATH.												
Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	All Ages.
26	58	33	15	12	6	...	...	...	...	...	...	150

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

WHOOPING-COUGH.

---

Whooping-cough was unusually prevalent during the year, more especially the first six months, and resulted in a considerably increased mortality. This disease is one of the most distressing and painful causes of death in very early life. The great majority of the deaths occur below two years of age, and nearly one-half below twelve months of age. It is plain from this circumstance that isolation of the infected infant in hospital presents many difficulties. In a large proportion of cases the patient would have to be accompanied by the mother, and the period of detention in hospital would in the majority of cases be protracted. During last year 538 deaths were directly attributed to whooping-cough, but this figure is by no means a complete representation of the mischief caused by it. Large numbers of infants who were strong enough to resist the attack of the disease itself, succumbed to the diseases of the lungs which followed it, whilst others would be permanently damaged.

Notwithstanding the difficulties in the way, some means of isolation will have to be found for the infected children, and some lessening of this disease may then be expected with confidence.

The following table shows the periods of the year and the localities in which deaths from Whooping-cough occurred, and also the ages at death.

The number of deaths from Whooping-cough during each of the six years 1895-1900 has been as follows : - 412, 298, 356, 333, 314, and 538.

DISTRICTS.	QUARTERS.								YEAR.		
	March.		June.		Sept.		Dec.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total
Scotland .....	15	22	13	15	10	10	7	5	45	52	97
Exchange .....	16	18	4	7	2	2	1	2	23	29	52
Abercromby .....	5	3	3	4	2	2	1	...	11	9	20
Everton .....	29	42	16	23	6	6	2	5	53	76	129
Kirkdale.....	3	5	7	16	6	12	...	1	16	34	50
West Derby (West) .....	8	16	9	13	4	1	2	4	23	34	57
Toxteth .....	8	16	11	23	9	8	1	3	29	50	79
Walton .....	2	6	...	2	1	4	...	...	3	12	15
West Derby (East) .....	2	2	2	10	2	1	1	...	7	13	20
Wavertree .....	1	1	2	4	2	1	...	1	5	7	12
Sefton Park .....	...	...	...	1	...	2	...	...	...	3	3
(late Toxteth Rural).											
Hospitals (Residences outside the City)	...	1	1	...	1	1	...	...	2	2	4
City .....	89	132	68	118	45	50	15	21	217	321	538

AGES AT DEATH.												
Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	All Ages.
205	173	84	27	25	23	1	...	...	...	...	...	538

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

## DIPHTHERIA.

Deaths from Diphtheria attained their maximum during the first and fourth quarters of the year. Appended is a table showing the periods of the year and the localities in which the deaths from Diphtheria occurred, and also the ages at death.

The deaths during each of the last six years have been as follows:—98, 120, 91, 123, 192 and 143.

DISTRICTS.	QUARTERS.								YEAR.		
	March.		June.		Sept.		Dec.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Scotland .....	1	1	...	...	...	2	...	...	1	3	4
Exchange .....	3	3	...	...	...	...	...	2	3	5	8
Abercromby .....	...	3	...	...	2	...	5	1	7	4	11
Everton .....	3	2	4	4	1	6	6	5	14	17	31
Kirkdale .....	2	1	2	...	...	2	2	...	6	3	9
West Derby (West) .....	4	...	6	4	3	...	2	...	15	4	19
Toxteth .....	5	5	5	2	5	1	6	8	21	16	37
Walton .....	1	2	1	2	...	2	3	3	5	9	14
West Derby (East) .....	...	...	...	...	2	...	...	1	2	1	3
Wavertree .....	3	1	...	...	...	...	...	...	3	1	4
Sefton Park .....	...	2	...	...	...	...	...	...	...	2	2
(late Toxteth Rural).											
Hospitals (Residences out- side the City).....	1	...	...	...	...	...	...	...	1	...	1
City .....	23	20	18	12	13	13	24	20	78	65	143

## AGES AT DEATH.

Under 1 year.	1	2—	3—	4—	5—	10—	15—	20—	30	40—	50—	60—	All Ages.
8	31	17	20	19	38	6	1	2	1	...	...	...	143

Deaths in Public Institutions are transferred to the Districts from whence the patients came.



## CROUP.

The following table shows the periods of the year and the localities in which deaths attributed to Croup occurred, and also the ages at death. Twenty of the deaths were attributed to Membranous Croup, and twenty to Croup.

DISTRICTS.	QUARTERS.								YEAR.		
	March.		June.		Sept.		Dec.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Scotland .....	...	...	1	1	...	2	...	1	1	4	5
Exchange .....	1	1	...	...	...	...	...	...	1	1	2
Abercromby.....	1	...	...	...	...	...	...	...	1	...	1
Everton .....	...	1	...	1	...	1	4	3	4	6	10
Kirkdale .....	1	1	1	...	...	...	...	...	2	1	3
West Derby (West) .....	3	...	...	...	...	...	1	...	4	...	4
Toxteth .....	2	2	1	1	...	...	1	...	4	3	7
Walton .....	1	...	3	1	...	...	1	...	5	1	6
West Derby (East).....	1	...	...	...	...	...	...	...	1	...	1
Wavertree .....	...	...	...	...	...	...	1	...	1	...	1
Sefton Park .....	...	...	...	...	...	...	...	...	...	...	...
(late Toxteth Rural).											
Hospitals (Residences outside the City) .....	...	...	...	...	...	...	...	...	...	...	...
City .....	10	5	6	4	...	3	8	4	24	16	40

AGES AT DEATH.												
Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	All Ages.
7	12	5	6	6	3	...	...	1	...	...	...	40

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

ZYMOTIC DIARRHŒA.

---

As is always the case, the mortality from diarrhœa chiefly affected infants, nearly three-fourths of the total number of deaths being those of infants under twelve months old. It commenced to increase about the end of June, and continued until October. Nine hundred deaths were registered from it during this brief period, and to these must be added deaths from the closely-allied or identical disease, English cholera.

Investigation proves incontestably that the deaths of infants from this cause are closely associated with the method of feeding, putrefying food being the medium by which the specific poison is commonly introduced. The deaths amongst children under three months of age, either wholly or partially fed on artificial foods, are fifteen times as great as they are amongst an equal number of infants fed upon breast milk; e.g., investigation has tended to prove that, out of every 1,000 infants under three months of age, naturally fed upon breast milk alone, 20 die of autumnal choleraic disease; but if the same number of infants, at the same age, are artificially fed, then, instead of 20 dying, as many as 300 will die from this cause.

The mortality is always highest in the season of decay; if the summer and autumn are wet and cool it is comparatively small, but a warm, dry season is invariably attended with a high mortality. (See page 161.)

## DEATHS FROM DIARRHŒA.

DISTRICTS.					QUARTERS.								YEAR.		
					March.		June.		Sept.		Dec.				
					M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.
Scotland ...	...	...	...	2	...	...	6	48	50	17	11	67	67	134	
Exchange ...	...	...	...	7	2	1	2	25	24	5	4	38	32	70	
Abercromby ...	...	...	...	1	1	...	1	16	12	2	3	19	17	36	
Everton ...	...	...	...	4	1	4	5	77	61	18	9	103	76	179	
Kirkdale ...	...	...	...	5	2	2	3	50	39	9	14	66	58	124	
West Derby (West) ...	...	...	...	1	1	4	7	47	45	5	4	57	57	114	
Toxteth ...	...	...	...	4	1	3	3	46	61	7	4	60	69	129	
Walton ...	...	...	...	4	...	...	1	22	18	1	1	27	20	47	
West Derby (East) ...	...	...	...	1	1	...	1	15	10	2	1	18	13	31	
Wavertree ...	...	...	...	1	...	...	...	10	12	...	3	11	15	26	
Sefton Park (late Toxteth Rural) ...	...	...	...	...	...	...	...	4	3	1	...	5	3	8	
Hospitals (Residences outside the City) ...	...	...	...	...	...	...	...	1	...	1	...	2	...	2	
City ...	...	...	...	30	9	14	29	361	335	68	54	473	427	900	

AGES AT DEATH.													
Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50	60 & up- wards.	All Ages.
667	157	21	6	1	4	1	1	1	2	5	5	29	900

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

List of Streets in the City wherein Three or more Deaths from  
Diarrhœa occurred during the year 1900.

STREETS.	No. of Deaths.	STREETS.	No. of Deaths.
Arkwright .....	11	Crown .....	3
Arlington .....	4	Edinburgh .....	4
Athol.....	3	Eldon .....	4
Back Queen Anne .....	3	Fonthill Road.....	3
Barmouth .....	3	Fountains Road .....	4
Beatrice .....	3	Goldsmith .....	3
Beau .....	6	Gordon .....	5
Beaufort .....	5	Grafton.....	3
Brisbane .....	3	Hornby.....	5
Buckingham .....	6	Howe.....	6
Burlington .....	8	Howley .....	3
Caradoc.. .....	3	Lamb ....	4
Chancel.....	3	Lamport .....	4
Chelmsford .....	5	Latimer .....	4
Chesterfield .....	4	Lemon .....	3
Clare .....	4	Limekiln Lane .....	3

In arranging the foregoing list of streets, all deaths occurring in hospitals have been transferred to the streets from whence the patients were removed.



List of Streets in the City wherein Three or more Deaths from  
Diarrhœa occurred during the year 1900.—*Continued.*

STREETS.	No. of Deaths.	STREETS.	No. of Deaths.
Luther .....	3	Reading .....	3
Mann .....	4	Richmond Row .....	3
Menai .....	3	Robsart .....	6
Mill .....	5	Rokesmith .....	4
Netherfield Road, N.....	3	Rose Hill .....	3
Newsham.....	3	Smeaton .....	3
Oliver .....	3	Smith .....	3
Opie .....	3	Tillard .....	6
Orwell Road .....	4	Upper Frederiek .....	3
Park Road .....	3	Upper Stanhope.....	4
Penrhyn .....	3	Vescock.....	3
Phythian.....	3	Warwick .....	3
Porter .....	4	Westmoreland Place .....	3
Portland .....	4	Wolfe .....	3

In arranging the foregoing list of streets, all deaths occurring in hospitals have been transferred to the streets from whence the patients were removed.

## OTHER ZYMOTICS.

The following table indicates the localities in which deaths from other forms of Zymotic disease occurred during the year:—

DISTRICTS.	Influenza.		Erysipelas.		Syphilis.		Rheumatic Fever.		Puerperal Fever.		Other Zymotics.		Y <sup>EAR</sup> .
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Scotland .....	7	12	2	1	5	5	1	2	...	...	6	6	47
Exchange .....	9	7	3	2	8	4	...	2	...	1	1	1	38
Abercromby .....	12	14	...	1	1	1	...	...	...	2	2	1	34
Everton .....	15	13	6	2	7	5	2	8	...	7	4	1	70
Kirkdale .....	6	10	1	2	3	2	2	1	...	2	3	8	40
West Derby (West) ..	17	19	2	1	2	4	5	5	...	6	5	3	69
Toxteth .....	24	23	3	3	4	1	2	5	...	3	3	2	73
Walton .....	11	12	...	...	2	1	1	2	...	...	8	2	39
West Derby (East)...	7	10	1	1	1	...	2	1	...	...	...	...	23
Wavertree .....	4	5	1	...	...	...	...	...	...	1	...	...	11
Sefton Park..... (late Toxteth Rural)	1	4	2	1	...	...	1	...	...	...	...	...	9
Hospitals(Residences outside the City)...	1	5	1	...	2	5	...	...	...	...	2	...	16
City .....	114	134	22	14	35	28	16	26	...	22	34	24	469

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

THE FOLLOWING TABLE SHOWING THE ANNUAL AVERAGE NUMBER OF DEATHS FROM SIX OF THE PRINCIPAL ZYMOTIC DISEASES DURING EACH OF THE LAST THREE DECENNIAL PERIODS, IS INTERESTING AND INSTRUCTIVE. THE DECLINE IN THE MORE FORMIDABLE FORMS OF INFECTIOUS DISEASES IS VERY MARKED.

Years.	Small Pox.	Typhus.	Scarlet Fever.	Measles.	Whooping Cough.	Diarrhœa.
1866 to 1875 ... ..	237·4	652·8	789·4	425·7	496·8	995·3
1876 to 1885 ..... ..	90·8	238·0	421·2	517·8	472·3	658·4
1886 to 1895 .. ..	8·8	37·1	257·5	399·5	322·4	600·6
*1896 to 1900 ..... ..	5·2	20·4	169·6	282·0	367·8	1069·4

\* Including extended City area.

ANNUAL AVERAGE NUMBER OF DEATHS FROM SIX OF THE PRINCIPAL ZYMOTIC DISEASES  
DURING EACH OF THE LAST THREE DECENNIAL PERIODS, DISTINGUISHING THOSE  
OF PERSONS ABOVE AND BELOW FIVE YEARS OF AGE.

YEARS.	SMALLPOX.		TYPHUS.		SCARLET FEVER.		MEASLES.		WHOOPING COUGH.		DIARRHŒA.	
	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.
1866 to 1875	141·7	95·7	* ...	* ...	187·7	601·7	14·4	411·3	9·9	486·9	105·7	889·6
1876 to 1885	62·5	28·3	* ...	* ...	137·0	284·2	35·4	482·4	18·6	453·7	61·9	596·5
1886 to 1895	6·2	2·6	† 33·2	† ·7	87·6	169·9	28·3	371·2	15·1	307·3	60·2	540·4
**1896 to 1900	4·6	0·6	19·4	1·0	46·2	123·4	16·0	266·0	13·0	354·8	66·0	1003·4

\* During these years the ages at death from Typhus were not differentiated. † During the eight years, 1888-1895.  
\*\* Including extended City area.



The following table shows the annual average death-rate, per 100,000 of the population, during each of the last three decennial periods, and during the five years 1896-1900, from the undermentioned Zymotic Diseases :—

DISEASES.	1866 to 1875.	1876 to 1885.	1886 to 1895.	1896 to 1900.
Typhus .. .. .	132·1	43·0	7·1	3·0
Small Pox ... ..	48·0	16·3	1·5	0·7
Scarlet Fever ... ..	159·9	76·2	49·6	25·3
Measles .. .. .	86·1	93·6	77·0	42·1
Whooping Cough ... ..	100·5	85·4	62·1	54·9

#### TUBERCULAR DISEASES.

These diseases are associated with insanitary surroundings, and with conditions of life which tend to lower the general health. Improved sanitation is accompanied by a diminished mortality from these forms of disease, as the accompanying table, which relates to the last three decades, indicates :—

	1866 to 1875.	1876 to 1885.	1886 to 1895.	1896 to 1900.
Annual Average Death-rate per 100,000 of the population, at all ages, from all forms of Tuberculosis ... ..	430·8	349·8	309·8	253·2
Annual Average Death-rate per 100,000 of the population above 5 years of age from Phthisis ..	362·8	278·6	244·4	203·4
Annual Average Death-rate per 100,000 of the population below 5 years of age from :				
Tabes Mesenterica	637·1	597·3	539·1	373·5
Hydrocephalus ..				
Scrofula ... ..				

The Group of Tubercular Diseases includes Phthisis, Scrofula, Tabes Mesenterica, and Hydrocephalus. They occasioned 1,717 deaths in the City of Liverpool during the year 1900.

DEATHS FROM PHTHISIS.

DISTRICTS.				QUARTERS.								YEAR.		
				March.		June.		Sept.		Dec.				
				M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Scotland ... ..	27	16	21	14	15	8	7	14	70	52	122			
Exchange ... ..	34	16	31	11	26	12	18	19	109	58	167			
Abercromby ... ..	30	13	26	18	16	13	16	11	88	55	143			
Everton ... ..	38	26	42	24	24	27	26	11	130	88	218			
Kirkdale ... ..	17	3	8	9	11	6	15	16	51	34	85			
West Derby (West) ... ..	34	17	22	21	14	9	21	20	91	69	158			
Toxteth ... ..	30	25	26	33	22	15	15	12	93	85	178			
Walton ... ..	9	4	9	9	7	8	4	4	29	25	54			
West Derby (East) ... ..	9	6	9	7	4	5	14	3	36	21	57			
Wavertree ... ..	7	5	3	1	2	1	4	2	16	9	25			
Sefton Park ... .. (late Toxteth Rural)	4	6	...	2	3	1	2	2	9	11	20			
Hospitals (Residences outside the City) ... ..	17	2	11	7	8	5	9	1	45	13	60			
City ... ..	256	139	208	156	152	110	151	115	767	520	1,287			
AGES AT DEATH.														
Under 1 year.	1—	2—	5—	10—	15—	20—	30—	40—	50—	60 & up- wards.	All Ages.			
7	8	10	24	21	78	282	369	288	124	76	1,287			

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

## DEATHS FROM OTHER TUBERCULAR DISEASES.

Viz.:—Scrofula, Tabes Mesenterica, and Hydrocephalus.

DISTRICTS.					Scrofula.		Tabes Mesenterica.		Hydrocephalus.		YEAR.		
					M.	F.	M.	F.	M.	F.	M.	F.	Total.
Scotland	...	...	...	...	12	4	11	6	5	8	28	18	46
Exchange	...	...	...	...	13	6	6	8	3	7	22	21	43
Abercromby...	...	...	...	...	8	10	3	5	5	5	16	20	36
Everton	...	...	...	...	16	21	9	11	9	10	34	42	76
Kirkdale	...	...	...	...	6	6	3	5	5	9	14	20	34
West Derby (West)	...	...	...	...	9	11	6	11	10	7	25	29	54
Toxteth	...	...	...	...	10	13	8	9	5	4	23	26	49
Walton	...	...	...	...	6	6	7	6	3	3	16	15	31
West Derby (East)	...	...	...	...	6	4	1	1	5	2	12	7	19
Wavertree	...	...	...	...	4	2	1	3	5	2	10	7	17
Sefton Park ... (late Toxteth Rural)	...	...	...	...	2	5	...	...	1	2	3	7	10
Hospitals (Residences outside the City)	...	...	...	...	9	2	2	...	2	...	13	2	15
City	...	...	...	...	101	90	57	65	58	59	216	214	430
AGES AT DEATH.													
Under 1 year.	1—	2—	5—	10—	15—	20—	30—	40—	50—	60 & up-wards.	All Ages.		
113	70	82	50	27	11	31	10	17	11	8	430		

Deaths in Public Institutions are transferred to the Districts from whence the patients came.

CANCER.

The following table indicates the number of deaths from Cancer and kindred Diseases during the last five years, and the part of the body affected by the disease :—

DISEASE.	1896.			1897.			1898.			1899.			1900.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Cancer of Stomach and Bowels..	81	56	137	86	126	212	92	89	181	103	86	189	70	101	171
“ Liver .....	33	41	74	24	31	55	23	42	65	29	46	75	25	47	72
“ Urinary and Generative Organs .....	7	103	110	10	94	104	12	73	85	21	89	110	11	103	114
“ Breast .....	2	54	56	...	45	45	...	47	47	1	49	50	...	48	48
“ Head and Face .....	15	3	18	12	6	18	11	7	18	19	8	27	16	8	24
“ Tongue, Neck, and Throat.....	47	11	58	39	9	48	47	10	57	31	9	40	44	9	53
“ Other parts of the Body .....	6	11	17	8	5	13	8	5	13	11	5	16	17	9	26
“ Parts not specified ...	12	13	25	11	8	19	17	12	29	7	16	23	4	14	18
Total .....	203	292	495	190	324	514	210	285	495	222	308	530	187	339	526



## ALCOHOLISM.

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Careful general observation leads to the conclusion that intemperance is becoming less frequent. Police statistics for several years past confirm this view. There are localities, however, which stand in marked and open contrast to this general improvement, districts in which drunkenness is extreme, and its attendant evil—poverty—as gross and palpable. Hence it is that yet again an increase in the number of deaths certified by coroners' juries to be the result of excessive drinking has to be recorded.

Inquests were held during the year on the bodies of 236 persons (129 of whom had died in Workhouses and Hospitals), viz.: 54 men and 52 women, whose deaths were caused by excessive drinking; 71 men and 49 women whose deaths were accelerated by excessive drinking; 6 men and 4 women who were fatally injured by accident whilst under the influence of drink.

In four inquests in which death was found to be the result of violence, the person committing the deed was drunk at the time, and in three of these both the person who inflicted the injuries and the injured person were drunk at the time; in one case the injured person was drunk, but the assailant escaped arrest.

In addition to the foregoing, "Alcoholism" is given as the cause of death of 14 men and 7 women.

There are many cases of fatal injury in which the verdict of "accidental death" omits any reference to the fact that the injured person was intoxicated at the time.

Injuries to infants and young children whilst in the custody of drunken persons are inevitable. Neglect figures even more frequently and more seriously than direct violence and drunken brutality (see page 13).

Deaths from excessive drinking are localised, and it is in the district where they are most numerous that the general death-rate is highest, and the proportion of deaths in workhouses is greatest, facts implying

misery and degradation, disease and death. Three districts are contrasted in these particulars.

	Population.	General Death-rate per 1,000.	Proportion of Deaths in Workhouses and Hospitals.	Proportion of Deaths due to Excessive Drinking.
Exchange	42,405	36·5	40·1 per cent.	3·4 per cent.
West Derby (East)	43,245	17·3	15·6 ,,	1·3 ,,
Wavertree	24,174	16·4	11·3 ,,	0·5 ,,

The following table shows the death-rate per 1,000 of the population, and the number of deaths from Fever and Diarrhœa during the last seventeen years:—

Year.	*Death Rate per 1,000 of Population from all causes.	Deaths from Diarrhœa.	Deaths from Fever.		
			Typhus.	Typhoid.	Continued.
1884	26·6	841	77	112	16
1885	25·6	422	71	95	16
1886	26·1	781	47	140	11
1887	26·4	619	52	130	12
1888	23·1	431	32	125	4
1889	24·9	575	45	167	...
1890	27·5	468	23	99	1
1891	26·8	330	37	92	2
1892	24·4	415	18	111	2
1893	26·7	866	44	221	5
1894	23·1	503	50	248	7
†1895	24·8	1,108	24	197	4
1896	21·4	851	36	166	2
1897	22·8	1,182	23	145	5
1898	22·2	956	19	148	5
1899	24·1	1,158	13	182	4
1900	23·1	900	11	120	4

\* Calculated on corrected population as per Census Returns of 1891 and 1901.

† City Boundaries extended.

Mr. Plummer, M.A., F.R.A.S., Astronomer to the Mersey Docks and Harbour Board, has kindly supplied the following tables relating to Meteorological observations made by him at the Liverpool Observatory, Bidston:—

### LIVERPOOL OBSERVATORY, BIDSTON, BIRKENHEAD.

Latitude  $53^{\circ} 24' 5''$  N. Longitude  $3^{\circ} 4' 20''$  W.  
Height above the Mean Level of the Sea 202 feet.

Year and Month, 1900.	Barometer. Mean.	Temperature. Mean.	Rainfall. Amount.	No. of days on which 0·01 in. or more rain fell.	Mean Monthly Humidity. Complete Satura- tion equal 100.
	Inches.	Degrees.	Inches.		
January .....	29·882	40·4	4·514	25	89
February .....	29·540	36·4	3·230	19	86
March .....	30·049	38·8	1·118	11	80
April .....	29·945	47·3	1·218	17	76
May .....	29·956	50·5	1·787	12	76
June .....	29·900	58·4	2·711	19	74
July .....	29·979	62·8	1·537	13	74
August .....	29·940	59·0	5·470	16	78
September .....	30·090	57·0	0·587	12	80
October .....	29·898	50·4	4·213	24	82
November .....	29·706	45·2	3·046	18	86
December .....	29·797	46·1	2·623	22	86

### DIFFERENCE FROM THE AVERAGE QUANTITIES OBSERVED DURING THE LAST 30 YEARS.

1900.	BAROMETER.		TEMPERATURE.		RAINFALL.	
	Above Average.	Below Average.	Above Average.	Below Average.	Above Average.	Below Average.
	Inches.	Inches.	Degrees.	Degrees.	Inches.	Inches.
January .....	...	0·046	1·2	...	2·397	...
February .....	...	0·412	...	4·8	1·594	...
March .....	0·147	...	...	3·4	...	0·575
April .....	0·048	...	...	...	...	0·417
May .....	...	0·008	...	1·3	...	0·119
June .....	...	0·090	1·0	...	0·656	...
July .....	0·047	...	2·0	...	...	1·275
August .....	0·025	...	...	1·5	2·574	...
September .....	0·158	...	0·8	...	...	2·548
October .....	0·028	...	0·8	...	0·649	...
November .....	...	0·193	2·0	...	0·371	...
December .....	...	0·077	6·2	...	...	0·025

### OBSERVATIONS OF VELOCITY OF WIND.

1900.	Average Hourly Velocity for Month.	Maximum Hourly Velocity.	Date of Maximum Velocity.	Minimum Hourly Velocity.	Date of Minimum Velocity
	Miles per Hour.	Miles		Miles.	
January .....	20·2	53	Jan. 22	3	Jan. 11.
February .....	15·2	47	Feb. 16	1	Feb. 7, 14, 24.
March .....	13·3	42	March 15	0	Mar. 30, 31.
April .....	17·2	59	April 13	1	April 2, 8, 19, 23, 24, 28.
May .....	14·6	46	May 3	1	May 1, 5, 6, 8, 16, 19.
June .....	12·8	33	June 26	0	June 1.
July .....	13·5	46	July 6	0	July 10, 19, 22.
August .....	13·2	52	August 7	0	August 14, 21.
September .....	14·0	41	Sept. 25	1	Sept. 17, 21.
October .....	19·6	54	Oct. 14	1	Oct. 19, 20.
November .....	15·1	41	Nov. 29	0	Nov. 2.
December .....	20·5	76	Dec. 28	1	Dec. 7, 18.

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# SANITARY ADMINISTRATION.

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## SANITARY ADMINISTRATION.

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For the purpose of carrying out the requirements of the various Sanitary Acts of Parliament and the Orders, Bye-laws, and Regulations made thereunder, the following staff of the Medical Officer of Health's Department has been employed during the year:—

*Chief Sanitary Inspector	...	...	...	...	1
*Deputy Chief Sanitary Inspector	...	...	...	...	1
*Prosecuting Sanitary Inspectors	...	...	...	...	7
*Inspectors for General Sanitary Purposes	...	...	...	...	28
*Female Inspectors for General Sanitary Purposes	...	...	...	...	8
§Inspectors of Meat and Animals	...	...	...	...	5
„ under the Diseases of Animals Act	...	...	...	...	2
** „ of Fish and Fruit	...	...	...	...	4
*** „ under the Sale of Food and Drugs Act...	...	...	...	...	3
* „ „ Workshop and Shop Hours Act.	...	...	...	...	3
† „ , Smoke	...	...	...	...	3
‡ „ , Ambulance	...	...	...	...	4
„ , Disinfecting	...	...	...	...	8
Superintendents of Disinfecting Apparatus	...	...	...	...	2
*Chief Inspector of Common Lodging and Sub-let Houses	...	...	...	...	1
***Inspectors of Common Lodging and Sub-let Houses	...	...	...	...	12
*Inspector of Canal Boats	...	...	...	...	1
* „ Bakehouses	...	...	...	...	1
*Inspectors of Cowsheds and Milkshops	...	...	...	...	2
Notice Servers	...	...	...	...	3
Permanent Clerical Staff	...	...	...	...	21
Temporary Assistants	...	...	...	...	6

In every case Officers are selected for these positions, whose previous training and occupation have been such as to fit them for the special

duties they are called upon to discharge. Those marked \* are required to hold the Certificate of the Sanitary Institute of Great Britain or a Certificate equivalent thereto; those marked † have Marine Engineers' First Class Certificates, and the ‡ Superintendent Ambulance Inspector holds Sanitary Certificate, and also the Certificate of St. John's Ambulance Association. \*\* Fishmongers by trade. § Butchers by trade; candidates are submitted to practical examination upon the lines which have been indicated in the Report of the Royal Commission upon Tuberculosis. \*\*\*Several hold the Certificate of the Sanitary Institute, or an equivalent thereto.

The number of occasions upon which the advice and assistance of the Health Department have been sought has increased during the year. The applications made by residents in the city fluctuate slightly; in 1896 they were 7,993, in 1897 they were 8,852, in 1898 they were 9,362, in 1899 they were 9,215, and in 1900 they were 11,321. As in former years, complaint in many cases was made to the Health Department only after repeated requests addressed to the persons causing or allowing the nuisance, or to agents or owners of property, had been ignored. Generally speaking, these complaints arise in connection with jerry-built property. A great deal of the time of the Inspectors was taken up by these special examinations.

Requests to examine important public buildings and offices, as well as highly-rented dwelling-houses, have been very numerous as usual, and the application of the smoke test has in many cases brought to light defects in the drainage system. Requests for the application of the smoke test are frequent.

A very large number of sanitary notices are served upon owners in respect to what is well known as "insanitary property."

Owners would do well to demolish property such as this, and erect suitable habitations in their place. By thus co-operating with the Housing Committee, they would rid themselves of the annoyance of receiving notices, and remove centres of disease and degradation from the city.

The following table shews the number of nuisances found by routine inspection or on complaints, and the character of the proceedings taken to abate the nuisances, and the results:—

					<u>1899.</u>	<u>1900.</u>
Number of Complaints made by Inhabitants	...	...			9,215	11,321
„	Nuisances discovered on above complaints	...			19,640	22,184
„	„	„	house to house			
			inspection	...	72,182	82,403
					<u>1899.</u>	<u>1900.</u>
„	Notices issued	...	{ Owners	42,978	47,301	
			{ Occupiers	1,203	1,559	
					44,181	48,860
„	Notes to complainants	...	...	...	3,945	4,464
„	„ sent to comply with notices	...	...	...	7,089	7,919
„	Nuisances re-inspected	...	...	...	128,087	136,186
„	„ abated on re-inspection	...	...	...	68,158	75,123
„	Drains repaired	...	...	...	30,872	32,215
„	Ashpits	„	...	...	1,919	2,565
„	Closets	„	...	...	27,619	31,723
„	Water Closet Conversions	...	...	...	16	12
„	Ashpits substituted by Bins	...	...	...	...	144
„	Spouts fixed and repaired	...	...	...	890	1,019
„	Notices to remove animals	...	...	...	195	187
„	Premises from which offensive matter has been removed	...	...	...	113	50
Nuisances caused by Stagnant Water	...	...	...	...	454	335
„	„ Dilapidated Houses	...	...	...	170	23
Number of Premises found without water and supplied					5,888	6,848
„	Chimneys repaired to abate smoke nuisances				20	2
„	Cellar Rails repaired	...	...	...	2	...
„	Premises under observation	...	...	...	1,325	1,091
„	Informations laid	...	...	...	1,232	1,229
„	Fined	...	...	...	279	345
„	of Magistrates' Orders	...	...	...	538	457
„	Acquitted or Withdrawn	...	...	...	415	427
	Amount of Fines and Costs	...			£315 3 0	£387 16 0



REFERENCES TO OTHER DEPARTMENTS.

A considerable number of conditions ascertained by the Sanitary Staff to be prejudicial to health were referred to other departments to be dealt with :—

			<u>1899.</u>	<u>1900.</u>
Referred to City Engineer ...	...	...	6,290	7,695
„ Building Surveyor ...	...	...	1,405	1,665
„ Water Engineer ...	...	...	7,362	7,704
„ School Board ...	...	...	18,202	16,607

The references to the Water Engineer comprise, mainly, defective fittings, resulting in waste of water; also cases in which the supply was insufficient, owing to various causes.

The references to the School Board chiefly relate to children from infected houses who are attending school, or who are suffering from ring-worm, ophthalmia, &c. (See page 88).

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REFERENCES FROM OTHER DEPARTMENTS.

			<u>1899.</u>	<u>1900.</u>
Received from the City Engineer ...	...	...	12,720	12,138
„ Water Engineer ...	...	...	3,876	4,538
„ Lodging-house Inspectors			6,597	6,998
„ School Board ...	...	...	6,879	7,905

The references from other Departments mainly comprise insanitary conditions discovered by officers belonging to those departments, but with which it is not within their province to deal. The City Engineer's Department continues to report defects in private drains brought to light during the process of systematic flushing.

HOUSE TO HOUSE VISITATION.

The following table indicates the results of the systematic house-to-house visitation by the District Male Staff:—

	<u>1899.</u>	<u>1900.</u>
Number of Inspections of Street Houses ... ..	16,149	20,833
„ Street Houses found Clean ... ..	13,770	17,749
„ „ „ „ Dirty ... ..	2,379	3,084
„ Apartments in Street Houses Examined	79,260	95,682
„ *Inspections of Court Houses ... ..	*1,356	4,012
„ Court Houses found Clean ... ..	942	3,190
„ „ „ „ Dirty ... ..	414	822
„ Apartments in Court Houses Examined	4,028	11,762
Total Number of Houses Examined and Re-inspected	20,278	27,752

DIRTY HOUSES.

	<u>1899.</u>	<u>1900.</u>
Number of Dirty Street Houses Inspected ... ..	2,379	3,084
„ „ Court „ „ ... ..	414	822
„ „ Cellars Inspected ... ..	887	797
„ „ Houses and Cellars Re-inspected...	3,678	2,906
„ Notices to Owners to Cleanse Dirty Houses ... ..	3,406	4,097
„ Notices to Occupiers to Whitewash Dirty Houses ... ..	418	472
„ Notices to Owners to Whitewash Exteriors of Courts ... ..	1,226	2,107
„ Informations ... ..	48	74
„ Fined ... ..	31	46
„ Acquitted or Withdrawn ... ..	11	28

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Amount of Fines and Costs ... ..£16 17s. 0d. | £28 3s. 4d.

\* A large number of visits was made to court houses for special purposes during 1899 and these to a considerable extent lessened the necessity for the routine visits during that year.

COURT AND ALLEY EXAMINATIONS.

								<u>1899.</u>	<u>1900.</u>
Number of Visits to Courts and Alleys ...	...	...	...	...	...	...	...	67,765	64,068
„ Closets found Dirty, but Cleansed by Officer's Instruction								74,231	71,248
„ Informations ...	...	...	...	...	...	...	...	20	12
„ Fined ...	...	...	...	...	...	...	...	19	12
								<hr/>	
Amount of Fines and Costs	...	...	...	...	...	...	...	£2 3 0	£1 4 0

Special and systematic visits to courts and alleys are made with the object of ensuring the cleanliness of the domestic offices and the surface of the courts. The aim is to keep the courts and alleys uniformly clean throughout the week, and with this view the district inspectors are instructed that every tenant in each court is in turn to be held responsible for the cleanliness of the court for a period of one week; the inspector records in his visiting book whose turn it is, and duly informs that tenant. Failing compliance with his requirements, an information is laid under the following bye-law, made under the Liverpool Sanitary Act, 1846 :—

First. From and after the day on which these bye-laws shall come into operation, whenever tenants or occupiers of several houses in courts, alleys, streets, and other places within the Borough, have the right to use in common any middenstead or privy, the several persons having such right shall be, and they are hereby required to keep the internal walls, floors, seats, and fittings of such middenstead or privy thoroughly clean, so that the same is not a nuisance or annoyance to any inhabitant of the said Borough.

Second. That if any privy or middenstead so used in common, or the walls, floors, seats, or fittings thereof, or any of them, shall be in such a state or condition as to be a nuisance or annoyance to any inhabitant of the Borough, for want of proper cleansing thereof, as aforesaid, then the persons having the use thereof in common as aforesaid, shall severally be liable to a penalty not exceeding 40s., and a further penalty not exceeding 5s. for every day during which the same shall remain in such state or condition.

But under the Public Health Acts Amendment Act, 1890, somewhat similar proceedings may be taken.



Section 21 of this Act runs as follows :—

With respect to any sanitary conveniences used in common by the occupiers of two or more separate dwelling-houses, or by other persons, the following provisions shall have effect :—

(1) If any person injures or improperly fouls any such sanitary convenience, or anything used in connection therewith, he shall for every such offence be liable to a penalty not exceeding ten shillings :

(2) If any sanitary convenience or the approaches thereto, or the walls, floors, seats, or fittings thereof is, or are, in the opinion of the urban authority or of the inspector of nuisances or medical officer of health of such authority in such a state or condition as to be a nuisance or annoyance to any inhabitant of the district for want of the proper cleansing thereof, such of the persons having the use thereof in common as aforesaid as may be in default, or in the absence of proof satisfactory to the court as to which of the persons having the use thereof in common is in default, each of those persons shall be liable to a penalty not exceeding ten shillings, and to a daily penalty not exceeding five shillings.

The stipendiary magistrate has rendered great help to the department by imposing a small fine in those cases in which a prosecution became necessary. Improvement results up to a point, but the constant attention of the officer is very necessary, since the filthy habits of the people soon lead to a recurrence of the dirty conditions if the visits are lessened.

The courts and alleys continue to decrease in number, owing to the demolition of low-class property for the extension of business premises, or to the removal of insanitary property by the Housing Committee. The number of courts and alleys scheduled for inspection in 1890 was 2,165, in 1895 it had fallen to 1,660, in 1897 it had further fallen to 1,593, in 1898 the number was 1,466, in 1899 it was 1,432, and in 1900 it was 1,195, showing a diminution in ten years of 970 courts.

During the year all courts and alleys having covered entrances were specially washed and hosed down by the scavengers. Under the Liverpool Sanitary Act the exteriors of all courts and alleys require to be limewashed every spring, or as often as may be necessary. In 1900 it was deemed advisable to cause the limewashing to be done in the autumn as well as in the spring.



## COMMON LODGING-HOUSES.

The Common Lodging-Houses Act provides that any person opening any premises as a Common Lodging-House, or receiving lodgers therein, without making application to the Medical Officer of Health to have such premises registered, is liable to a penalty of 40s. for every such offence.

When premises have been approved and registered in accordance with the requirements of the Common Lodging-Houses Act, the following rules and instructions, together with suitable and permanent cards indicating the various requirements, are handed to the keeper, to place in a prominent position in each room.

In addition to the requirements mentioned in the following instructions, the cleanliness and suitability of the beds and bedding engage the attention of the inspector :—

### RULES AND INSTRUCTIONS.

1.—No greater number than                      Lodgers are to be received or accommodated in this house at any one time.

2.—The windows of every sleeping-room in this house are to be opened, and kept open to their full width, from nine to ten o'clock every morning, and from two to three o'clock every afternoon (weather permitting), unless in case of sickness in any room requiring the windows to be closed.

3.—The floors of every room in this house shall be well swept every morning before the hour of ten, and shall be well washed during the morning of every Friday.

4.—This house shall be thoroughly cleansed, and the walls and ceiling of every room in this house shall be well and sufficiently lime-washed, and the blankets, rugs, and bed-clothes, and covers used in this house, shall be thoroughly cleansed and scoured in the first week of each of the months of April, August, and December.

5.—Upon any person in this house, whether a Lodger or one of the family, being affected with fever or any contagious or infectious disorder, the Keeper shall forthwith give notice thereof to the Medical Officer of Health, at his Office, Municipal Offices, Dale Street, and the Medical Officer will visit the house, and take such proceedings as he shall think proper in compliance with the Act.

6.—If any person in this house shall be affected with fever or any infectious or contagious disorder, the blankets and bed-clothes used by such person shall be thoroughly cleansed and scoured, and the bedding fumigated, immediately after the removal of such person, and where the bedding used consists of shavings or straw, the same shall be burned immediately after such removal.

7.—The Keeper of this house shall provide sufficient accommodation for washing, together with a sufficient supply of water for the use of the Lodgers herein.

8.—The Keeper of this house shall reduce the number of Lodgers, or shall cease to receive and accommodate Lodgers altogether, immediately upon receiving notice to that effect from the Medical Officer of Health.

9.—This ticket shall be placed and kept in such situation in this house as the Medical Officer of Health shall from time to time direct, and shall be produced and delivered to such Officer on demand.

N.B.—The keeper of any lodging-house defacing or removing this ticket or disobeying the above Rules and Instructions, will be liable to the several penalties in that behalf provided by the Bye-laws for regulating Lodging-houses, a copy whereof may be obtained on application at the Office of the Town Clerk, at the Municipal Offices, Dale Street.

By order of the Health Committee.

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At the end of 1899 there were on the register a total (including emigration houses) of 695 lodging houses, and at the end of 1900 the total number was 695, which furnished accommodation for 14,541 lodgers, besides 2,186 members of the keepers' families.

During the year 207 houses were given up and removed from the register, and 207 new houses added, leaving the number on the register the same as last year.

Four applications were refused by the Health Committee on the ground that the houses were not suitable for the purpose.

In some of the better-class houses for men, separate cubicles are provided for each lodger, the price paid for them varying from 6d. to 1s. 6d. per night. These cubicles are much more appreciated than the ordinary accommodation provided.

The number of what are known as "model" lodging-houses, for men only, upon the register is 152, and these are registered to accommodate 6,752 lodgers, as well as 299 members of the keepers' families.

The term "model" appears now to be used as a trade designation to indicate premises used for the accommodation of one sex only.

There are also 24 registered model lodging-houses for the accommodation of women only. These have room for 624 lodgers, in addition to 29 members of the keepers' families.

The visits to lodging-houses are both by day and by night. The night visits are almost restricted to the lower districts and commoner class of house. The lodging and emigration houses of the better class, especially those provided only with single beds for each person, and with no more beds than are equivalent to the number of lodgers allowed, are only occasionally visited at night, unless special circumstances necessitate a closer supervision.

Houses which are not licensed either as lodging or sub-let houses are frequently visited by day when such a course is deemed expedient, in order to ascertain whether any grounds exist for putting these houses on the register.

There were 816 visits paid during the year to such houses, and in two of the cases, where suspicion was confirmed, night visits were also paid, and the tenants summoned and fined by the magistrate for taking lodgers without having the premises registered.

Persons harbouring lodgers in unlicensed premises receive a notice to apply to have the rooms measured and licensed. There were 138 such notices issued during the year, but in only 2 cases was it necessary to institute prosecutions.



The number of day visits paid during the year was 28,436, and the night visits 2,009. During the preceding year the day visits were 28,279, and the night visits 1,944.

One hundred and seven informations were laid against keepers of common lodging-houses during the year for the following offences:—

				<u>1899.</u>	<u>1900.</u>
Not sweeping floors	...	...	...	49	28
Not washing floors	...	...	...	29	43
Overcrowding	...	...	...	41	20
Receiving lodgers in unlicensed rooms	...			10	6
Not applying to register	...	...	...	3	2
Mixing sexes	...	...	...	10	—
Not limewashing	...	...	...	8	8
				<hr/>	<hr/>
Total	...	...	...	150	107

Convictions followed in 104 cases, the total amount of fines amounting to £26 12s. 6d., and ranging from 1s. and 1s. costs to 20s. and costs. During the preceding year there were 143 convictions, and the fines amounted to £54 12s. 6d.

Three cases were withdrawn.

The number of lodging-houses found dirty was 119; in each case notices were served to limewash and cleanse.

The Bye-law requires that every case of infectious sickness in a lodging-house should be at once reported to the Medical Officer of Health. Thirty-six cases of infectious sickness occurred in lodging-houses; 33 of the patients were at once sent to hospital; of the remaining three, two were members of the keeper's family, and the third a lodger, and were not removed, the license being suspended until the recovery of the patients. In all cases the bedding was removed to the disinfecting apparatus, and the rooms purified and cleansed. There were 60 deaths from non-infectious diseases in lodging-houses, 32 of the deceased persons belonging to the keepers' families, and 28 were lodgers.



### SEAMEN'S LICENSED LODGING-HOUSES.

The Corporation have made bye-laws, with the sanction of the President of the Board of Trade, for the licensing of Seamen's Lodging-houses, under the Merchant Shipping (Fishing Boats) Act, 1883, Section 48.

These Bye-laws are as follows:—

1.—That from and after the 1st day of October, 1887, the Bye-laws as to Seamen's Licensed Lodging-houses, made by the Council of the City of Liverpool on the 6th day of December, 1882, shall be repealed.

2.—In these bye-laws the expression “Registered Common Lodging-House” means a common lodging-house registered as such pursuant to the enactments and bye-laws or regulations in force in that behalf in the City of Liverpool; and the expression “Registered Lodging-House” means a lodging-house registered as let in lodgings or occupied by members of more than one family, pursuant to the enactments and bye-laws or regulations in force in that behalf in the said City.

3.—On the written application of the keeper of any registered common lodging-house or registered lodging made in such form and stating such particulars as the Council require, the Council will (subject as hereinafter mentioned), if they see fit, grant to such keeper a license authorising him to designate his registered house a Seamen's Licensed Lodging-House.

A license may contain such conditions not being inconsistent with the laws, bye-laws, and regulations for the time being in force in the City, and being specified in the license as the Council see fit.

4.—Such license shall not be granted in respect of any house not being a registered common lodging-house or registered lodging-house; nor in respect of any house where intoxicating liquor is sold, nor in respect of any house occupied or used for the purpose of the business of a clothier, or outfitter, or slop dealer.

Such license shall not be granted to a person who holds a license for the sale of intoxicating liquor, or who is engaged or interested in the business of a clothier, outfitter, or slop dealer.

Provided always that each licensee may sell and supply to bona fide seamen boarders in his house, and to no other person or persons, clothes and slops upon the following conditions, viz.:—

(1) That the licensee submit to the Local Marine Board, annually, or oftener if required, a scale of charges for board, lodging, clothing, and portorage, to be made in or in connection with his house for the approval of the said Board.

(2) That the licensee shall at all times keep hung up in the dining or common room of his house, in a conspicuous position, where it may be seen by all the boarders, a certified copy of the scale of charges approved by the Board.

(3) That the licensee deposit a like certified copy of the scale of charges with the Superintendent of the Mercantile Marine Office of the Local Marine Board.

(4) The licensee shall not make a higher charge than is provided for by the scale, or any charge not provided by the scale on any pretence whatever.

(5) Any dispute respecting any item of account shall be referred to the Superintendent of the Mercantile Marine Office, whose decision shall be final.

5.—The Council shall cause to be kept a Register of all licenses granted under these bye-laws, and the suspension or revocation of any license shall be noted in that register.

6.—A license granted to any person under these bye-laws is not transferable to any other person, and any holder of a license who transfers or lends the same to any other person is deemed guilty of a breach of these bye-laws.

7.—A license granted under these bye-laws continues in force (subject to suspension or revocation, as in these bye-laws provided) for one year from the date of the grant thereof, but the Council may at their discretion refuse to renew any license.

8.—A license granted under these bye-laws may be suspended or revoked by the Council on breach of any of its conditions, or on the conviction of the holder of any felony, misdemeanour, or offence against any law, bye-law, or regulation for the time being in force in the City, or on the Council being satisfied that the holder has been guilty of a breach of the Merchant Shipping Act, 1854, or the Acts amending the same, or has kept a house in which drunkenness, gambling, or immoral or fraudulent practices prevail, or has been a party to such proceedings, or neglects to remove from the lodging-house any persons of known immoral character who may have entered therein.

Within seven days after suspension or revocation of a license the holder shall deliver his license to the Town Clerk; but at the expiration of a period of suspension the license shall be returned to the holder.

9.—Every keeper of a Seamen's Licensed Lodging-House, and every other person having or acting in the care or management thereof, shall at all times when required by the Medical Officer of Health, or Lodging-House Inspector, or Inspector of Nuisances of the District, the Chief Constable or any Inspector of the City Police Force, or any Detective officer specially authorised by the Chief Constable for the purpose, or any officer of the Board of Trade or Local Marine Board, give them, or any of them, free access to such house.

10.—Any person who, not being the holder of a license under these bye-laws, and any holder of a license who, during a period of suspension, uses or publishes any sign, notice, inscription, ticket, placard, advertisement, circular, letter, or other document stating or implying that his house is a Seamen's Licensed Lodging-House, is deemed guilty of a breach of these bye-laws. Every person guilty of a breach of these bye-laws shall be liable to a penalty not exceeding five pounds.

11.—Nothing in these bye-laws shall in any way prejudice or affect the operation of the enactments, bye-laws, or regulations applicable to any registered common lodging-house or registered lodging-house as such, or to any keeper of any such house.



The foregoing bye-laws must necessarily exercise a beneficial effect upon those houses which are licensed as Seamen's Licensed Lodging-Houses, but the great bulk of common lodging-houses, to which seamen commonly resort, are dealt with by regulations under the Common Lodging-Houses Act of 1851.

Applications from the keepers of Registered Common Lodging-Houses for licenses authorising the designation of such Registered Common Lodging-Houses as Seamen's Licensed Lodging-Houses, are infrequent, only twelve such licensed lodging-houses now being on the register; these provide accommodation for 199 seamen.

The number of licenses granted since the adoption of the Seamen's Licensed Lodging-House Bye-laws is 27. Fifteen have been given up, none withdrawn, and there are 12 at present on the register.

It has not been found necessary to institute proceedings under the bye-laws in question.

Some years ago the holders of licenses to keep Seamen's Lodging-Houses were authorised by the Board of Trade to board vessels and seek for lodgers, and while this privilege was granted there was an advantage in holding such a license, but that privilege being now withdrawn, it does not appear that there is any advantage to the keeper of a common lodging-house to have his premises registered as a Seamen's Lodging-House, and hence probably the small number upon the register.

### SUB-LET HOUSES.

These are houses, one or more rooms of which are let off in each case by the chief tenant or owner of the house to members of one or more other families. The Bye-laws provide for registration and inspection, in order to prevent overcrowding, and to ensure attention to cleanliness and sanitary requirements.

The number added to the register during 1900 was 1,030, making the total on the register on the 31st December, 18,049. The reasons for putting the houses on the register have arisen from various causes, some no doubt are owing to persons who have come from insanitary property which has been demolished, but the majority are due to the influx of navvies and their families on account of



work in the district. In several instances reservists' wives gave up their own houses and went into lodgings. Many of the houses dealt with by the Housing Committee, as unfit for human habitation were on the sub-let register. The number of visits paid to sub-let houses during the night was 17,125, and during the day 53,202, with the result of finding 955 rooms overcrowded. In addition to overcrowding, 551 cases of indecent occupation came under the notice of the inspectors, as against 598 last year. The character of the indecent occupation may be judged from the following facts:—In 255 instances one man and two women were found in the same bedroom; in 201 instances two men and one woman; in 31 instances two men and two women; in 22 instances one man and three women; in 29 instances three men and one woman; in 1 instance three men and three women; in 6 instances two men and three women; in 1 instance two men and four women; in 2 instances four men and one woman; in 1 instance five men and one woman; and in 2 instances one man and three women. These cases appear to be the outcome of ignorance and indifference, and not of immoral intent.

The mixing of sexes will be an offence under the new Sub-Let House Bye-laws, which come into operation in 1901.

Informations were laid against 970 chief tenants, "room-keepers," for breach of the bye-laws, viz.:—

Overcrowding	...	...	...	...	...	635
Floors not washed	...	...	...	...	...	110
Floors not swept	...	...	...	...	...	225
						<hr/>
Total	...	...	...	...	...	970

As the result of proceedings before the Stipendiary Magistrate, fines were inflicted as follows:—814 fined 1s. and 1s. costs; 98 fined 1s. 6d. and 1s. 6d. costs; 24 fined 2s. and 2s. costs; 15 fined 2s. 6d. and 2s. 6d. costs; 7 fined 5s. and 4s. 6d. costs; 2 fined 10s. and 4s. 6d. costs; 4 fined 20s. and 4s. 6d. costs; making a total of fines levied during the year of £114 6s. 6d. Offences against the bye-laws have been fewer than in the preceding year. There were 371 more inspections by night than in the preceding year, but the day visits were 4,329 fewer.

It is gratifying to find that during the last few years offences against the bye-laws relating to sub-let houses are diminishing. Neglect in keeping the premises clean is less frequent, and what is of greater importance, overcrowding is less.

In 1897, 856 chief tenants were proceeded against and fined for overcrowding, in 1898, 739 persons were similarly dealt with for this offence; in 1899 this number was reduced to 708, and last year the number of informations for this offence had fallen still further to 635. It must be borne in mind that not unfrequently the same person is convicted several times for overcrowding, in fact there is no reason to doubt that there are persons who systematically sub-let and overcrowd, e.g. amongst the convictions alluded to there are three against one person who was convicted 4 times last year for a similar offence in different houses. In this particular, although it may not have any marked bearing upon the question, it is not without interest to note that the number of inmates per house in Liverpool has been steadily diminishing during the last 20 years. At the census of 1881, it was found to be 5·9 per house, in 1891 it was 5·6 per house, and in 1901 it was 5·5 per house.

These facts sufficiently dispose of the oft-repeated allegations that the action of the Insanitary Property Committee has resulted in overcrowding, a time-honoured fallacy always put forward to check the removal of insanitary slums from the City.

The gradual diminution in overcrowding has led the Health Committee to amend the bye-laws relating to sub-let houses, and at the close of the year the City Council, with the sanction of the Local Government Board and on the recommendation of the Health Committee adopted amended bye-laws, which amongst other important provisions contained clauses providing that every lodger above 10 years of age shall have not less than 400 cubic feet of air space, and every person below 10 years of age shall have not less than 200 cubic feet, but if the room is used as a day-room as well as a bedroom, then every inmate must have at least 400 cubic feet. Under the existing bye-law a space of 350 feet only was required, and two persons under twelve were regarded as one adult.

EXAMINATION OF CELLAR DWELLINGS.

	<u>1899.</u>	<u>1900.</u>
Number of Street Cellars inspected ... ..	6,196	7,424
„ „ „ found empty ... ..	17	140
„ „ „ used for Lumber, &c. ...	1,843	2,899
„ „ „ found illegally occupied...	598	279
„ „ „ „ legally „ ...	3,738	4,106
„ Notices issued to Owners... ..	852	425
„ „ „ Occupiers ... ..	565	276
„ Informations against Street Cellar Owners	22	14
„ Fined ... ..	6	6
„ of Informations against Street Cellar Occupiers ... ..	15	14
„ Fined ... ..	6	4
„ of Court Cellars inspected ... ..	258	1,043
„ „ „ found empty ... ..	12	79
„ „ „ used for Lumber, &c. ...	171	805
„ „ „ illegally occupied ...	16	8
„ „ „ legally „ ...	59	151
„ „ and Street Cellars found dirty...	887	797
„ Informations against Court Cellar Owners	4	5
„ Fined ... ..	4	3
„ of Informations against Court Cellar Occupiers ... ..	1	1
„ Fined ... ..	1	—
Amount of Fines and Costs ...	£14 5 0	£14 19 6

The total number of cellars let as separate dwellings at present upon the register is 3,209 besides which there are 6,478 cellars used in conjunction with the dwelling-house above, but not let as separate dwellings.

The number of cellars filled in by the Health Committee, free of charge to the owners, during the year is 54 and the total filled in during the last ten years is 949.

About 10,500 people are at present housed in cellars.

Cellars occupied as dwellings must comply with certain requirements under the Liverpool Improvement Act of 1871, and the Public Health Act of 1875. The requirements of the Act specially relating to Liverpool may be summarised as follows, and any person who lets or suffers to be



occupied any cellar, in contravention of these requirements, is liable to a penalty not exceeding ten pounds:—

“For the purpose of this enactment, every room, the surface of the floor of which is more than four feet below the level of the nearest street, shall, if intended to be used as a separate dwelling, be deemed a cellar dwelling, and every cellar which any person shall at any time apparently inhabit or in which any person shall be found between the hours of eleven in the evening and five o'clock in the morning, shall be held and taken to be occupied as a separate dwelling.”

“Every cellar dwelling shall have a height from the floor to the ceiling in every part of such dwelling of not less than seven feet; no cellar dwelling shall have any part of its floor more than four feet below the surface of the footway of the adjoining street; every cellar dwelling shall have, both at the front and rear thereof, and for the full extent thereof, respectively, an area not less than two feet six inches wide in every part thereof, from six inches below the floor of the cellar to the surface of the ground adjoining the front and rear thereof respectively; if the cellar dwelling consists of two cellars back-to-back, it shall suffice if there be one area in front and one behind such two cellars; every area shall be protected by railings or gratings to the satisfaction of the Corporation; the steps for access to the cellar dwelling may be in the area, but shall not be opposite to the window of the cellar; the steps or access to the house above the cellar door may be across or over but not in such area, and shall not be over or opposite the window of the cellar; save as aforesaid the areas in the front and rear, respectively, shall be open and free from obstruction; every cellar or room in any cellar dwelling shall have an open fire-place, with a proper flue therefrom; every cellar dwelling shall have a water-closet, or other like convenience, and (if required by the Corporation) an ash pit or dust bin, to be built or placed in such situation as the Corporation think fit, and to their satisfaction; every cellar dwelling shall have at least one window in an outer wall, and not less than three feet square or nine square feet clear of the sash frame, and if such cellar dwelling consists of two or more cellars, each of such cellars shall have one such window; every such window shall either be a casement window, opening on hinges or pivots, or a sash window with double sashes opening at the top and bottom.”



The Building Surveyor has kindly supplied the following table:—

NUMBER OF HOUSES ERECTED AND TAKEN DOWN DURING THE YEAR ENDING  
31st DECEMBER, 1900.

DISTRICTS.							Number erected.	Number taken down
Scotland	...	...	...	...	...	...	10*	297
Exchange	...	...	...	...	...	...	14	334
Abercromby	...	...	...	...	...	..	2	107
Everton ..	...	...	...	...	...	...	41	7
Kirkdale	...	...	...	...	...	...	9	—
West Derby (West)	...	...	...	...	...	...	25	11
Toxteth ...	...	...	...	...	...	...	6	119
Walton ..	...	...	..	...	...	...	300	2
West Derby (East)	...	...	...	...	...	...	373	22
Wavertree	...	...	...	...	...	...	481	—
Sefton Park (late Toxteth Rural.)	...	...	...	...	...	...	312	—
Total ... ..							1,573	899

\* Not including the Dryden Street houses erected by the Housing Committee,  
(see page 180).

The City Engineer has kindly supplied the following:—

Number of cellars filled in during 1900	...	...	...	...	...	54
„ „ „ the last 10 years	...	...	...	...	...	949

SEWER VENTILATION TO END OF 1900.

Number of 9-inch by 6-inch, 9-inch, 6-inch, 6-inch by 4-in, 4-inch by 4-inch, 4-inch, and 3-inch Iron Pipe Ventilating Shafts	...	...	1,113
Number of Street Ventilating Manhole Covers and Gratings	...	...	6,727

CANAL BOATS.

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The Leeds and Liverpool Canal Company are the proprietors of the only canal having direct communication with Liverpool, and the length of the waterway within the City, exclusive of the locks which lead to the docks, is about 3 miles.

The number of inspections of canal boats during the year was 5,133, and the condition of the boats and their occupants, as regards matters dealt with in the Acts and Regulations, is indicated by the following information :—

Eleven boats, not registered by their present owners, were found to be used as dwellings. Written notices were sent to the owners in each case. The notices were complied with in 8 cases, 2 boats ceased to be used as dwellings, and one has not been seen in the district since.

Forty-three boats were found without certificates on board. Notices were sent to the owners in each case, and 39 were complied with. Three have not been seen in the district since, and one is not now used as a dwelling. Fifty boats were found without the registered number painted on both sides of the boat. Notices were sent to the owners in each case, and the omission rectified in 45 cases. Four have not been seen in the district since, and one is not now used as a dwelling.

In 13 cases defective second bulkheads were reported. Notices were sent in each case, and 10 were complied with. One boat has not been seen in the district since, and 2 are not now used as dwellings.

In 13 boats the cabins required painting. Notices were sent to the owners in each case, and eight were complied with. Three boats have not been seen in the district since, and two are not now used as dwellings.

Dirty cabins were reported in 15 cases. In 3 cases verbal notice was given to the masters, and in the others written notices were sent to the owners. In 9 cases in which the notices were sent to the owners they were complied with, and three not being complied with, informations were laid against the masters, and small fines inflicted. The cabins were subsequently cleaned. Three of the boats are not now used as dwellings.

Besides the foregoing, there were 126 instances of infringements of the Acts and Regulations, caused by leaky decks (61), general leaky condition of boats (9), no doors to lockers (1), broken scuttle covers (1), defective ventilation (1), broken floors (14), no water casks on board (34), defective stoves (5). In each case notices were sent to the owners. One hundred and eighteen of the notices were complied with, and 6 have not been re-inspected. Two of the boats are not now used as dwellings.

Informations were laid in 14 cases, viz., non-separation of sexes, 6; overcrowding 3, dirty cabins 3, not properly marked and numbered 1, and not registered 1. In 13 cases fines were inflicted, varying from 1s. and 1s. costs, to 10s. and 4s. 6d. costs; one was acquitted on the master promising not to use the boat as a dwelling. Total amount of fines was £4 6s. 0d.

No cases of infectious sickness occurred on the boats whilst in the district during the year, but the cabins and bedding of two boats were disinfected, as information was received that cases of infectious sickness had been removed from the boats outside this district, and that disinfection had not been carried out. The usual certificate of disinfection was given to the masters in each case.

The entire number of infringements of the Acts and Regulations referred to in the Report occurred on 178 boats, in several instances the offence being repeated on the same boat.

Thirty notices were sent to the School Board of children living on canal boats, and not attending any school.

The number of boats on the register is 607. Thirty-four boats have been removed from the register, as it was ascertained that 20 of them had been broken up, that 9 had been sold, and were no longer used as dwellings, and 5 were removed from the register at the request of the owners, being disused. It is probable that other boats have been broken up, or have left the district, but in the absence of definite evidence of this, the boats remain on the register.

During the year 15 new boats were registered, 24 re-registered on account of changes of owners, 1 re-registered on account of structural alterations, and 1 re-registered owing to the boat's name being changed. All boats re-registered in consequence of a change of owners, or the name of the boat being changed, or on account of structural alterations, retain their original numbers.

Copies of the registration certificate were issued to the owners of 14 boats owing to the original ones being worn out.

There were 66 changes of masters reported, and the fact duly recorded on the register.

In 1898 the Canal Boat Inspectors were appointed as Port Sanitary Inspectors, an appointment which authorised them to inspect all classes of boats, as a difficulty arose in regard to certain boats plying upon the canal which were not registered under the Canal Boats Act, but which had been registered by the Board of Trade under the Merchant Shipping Act. Twenty-three visits were made to boats of this class, and all were found correct.



### BAKEHOUSES.

The sanitary control of Bakehouses is dealt with under the Factory and Workshop Acts and Public Health Acts, which prescribe the following regulations:—

Every bakehouse must have the whole of the interior walls and ceilings, and all passages and staircases of the bakehouse, painted, varnished, or lime-washed; if painted or varnished they must be washed with hot water and soap at least once in every six months, and the paint or varnish renewed once at least in every seven years; if the walls, &c., are lime-washed, the lime-washing must be renewed once at least in every six months.

No sleeping-place shall be permitted on the same level as a bakehouse, and forming part of the same building, unless it is effectually separated from the bakehouse by a partition extending from floor to ceiling, and unless ventilated by an external glazed window of at least nine superficial feet in area, of which area at least one-half may be fully opened for ventilation.

No water-closet or ashpit shall be within or communicate directly with the bakehouse. The cistern for supplying water to the bakehouse shall be separate and distinct from any cistern for supplying water to a water-closet. No drain shall have an opening within the bakehouse.

No place underground may be used as a bakehouse unless it was so used at the commencement of the Factory and Workshop Act, 1895.

All bakehouses must be kept in a cleanly state, free from effluvia arising from any drain, water-closet, or other nuisance; they must be properly ventilated, and possess at least 250 cubic feet of space for each person during ordinary working hours, and 400 cubic feet during overtime. A reasonable temperature must be maintained, and suitable sanitary conveniences provided for those employed in the bakehouse.

By Section 3 of the Workshop Act, 1891, if any child, young person, or woman is employed in a bakehouse, the Medical Officer shall, on becoming aware thereof, give a written notice to His Majesty's Inspector of Factories.

Where any room or place used as a bakehouse is in such a state as to be, on sanitary grounds, unfit for use as a bakehouse, the occupier is liable on summary conviction to a fine not exceeding forty shillings.

Forty-two bakehouses were added to the Register during 1900; about one-third of these are bread-bakers and confectioners, the remaining two-thirds are small pie and cake shops, which require supervision.

During the year three cellar bakehouses have ceased to be used for baking purposes, the ovens demolished, and the premises reconstructed for other purposes.

Number of Bakehouses on Register, 31st December, 1900 ..	...	1,040
„ Bakehouses added to Register during 1900 ...	...	42
„ Bakehouses struck off Register during 1900 ...	...	29
„ Visits paid to bakehouses ...	...	4,206
„ Bakehouses found dirty (walls and ceilings) ...	...	475
„ Notices issued for lime-washing ...	...	334
„ Bakehouses lime-washed without notice...	...	141
„ Notices issued for defective ventilation...	...	26
„ „ „ to cease to use bakehouses for the purpose of domestic washing ...	...	2
„ „ „ to repair defective drains and waste pipes ...	...	13
„ „ „ to discontinue using bedrooms opening directly into bakehouses ...	...	5
„ „ „ to take drains out of bakehouses ...	...	5
„ „ „ to repair defective floors and walls ...	...	11
„ „ „ to repair defective ceilings ...	...	18
„ „ „ to provide suitable water-closet accom- modation ...	...	1
„ „ „ to remove and cease to keep animals in bakehouse ...	...	1
„ „ „ to cease to use bakehouses unfit owing to insanitary conditions ...	...	2
„ „ „ to cleanse floors, windows, areas, tables and troughs ...	...	86
„ „ „ to cease to use as bakehouses places underground not in conformity with Act, 1895 ...	...	9
„ „ „ to remove accumulations of foul water		3
„ „ „ „ „ trade refuse		16
„ „ „ to repair defective roofs ...	...	3
Number of References to Government Factory Inspector...	...	19

All the above Notices were complied with except in two instances, for which informations were laid, viz.:—In the first instance for using premises unsuitable for baking purposes, the defendant was fined 1s. and costs, and in the other instance, for a similar offence, the information was withdrawn, as the defendant had in the meantime left the premises.

There are grave objections to the construction of bakehouses, any part of which is underground.

The chief objections are :—

(1) The difficulty in obtaining proper fall for draining when cleansing the bakehouse floors.

(2) Risks from backing up of drains in times of flood, or from choking of drains.

(3) The difficulty in obtaining adequate light and ventilation, owing to the way in which the ovens are usually arranged.

(4) The risk of dust and other refuse being blown into the bakehouse, and on to the tables, &c., owing to the windows being nearly on a level with the street.

(5) The difficulties in preventing the areas from becoming receptacles of rubbish and filth.

Drains within bakehouses are prohibited by the Factory and Workshops Act, 1895, which provides that no opening to a drain shall be within the bakehouse. Consequently all the bakehouses in use in this City have had the drains removed.



### SHOP HOURS ACT, 1892—5.

The object of the Act is to prevent the employment of young persons for such an excessive number of hours as will prejudice the health of these employés.

During 1900, under the above Act, there have been 3,418 visits paid to shops during the day, and 2,527 visits made after six o'clock; in 5,387 instances the shops were found to be correct, and 558 incorrect.

The persons concerned have generally evinced readiness to comply with the requirements of the Act, and have thus lessened the difficulties in its administration. The number of occasions in which it was necessary to take police proceedings during the last three years is small.

			<u>1898.</u>	<u>1899.</u>	<u>1900.</u>
Number of Shops visited (day)	...	...	4,973	4,670	3,418
„	„	found incorrect	442	395	331
„	„	visited after 6 p.m	2,599	2,635	2,527
„	„	„ found incorrect	236	252	227
„	copies of Act distributed by the				
	Inspectors	...	246	174	158
„	Informations for excessive				
	hours	...	—	1	0
„	Convictions	...	—	1	0
„	Informations for not exhibiting				
	Notice of Act and Require-				
	ments as to hours of work		7	3	6
„	Convictions	...	4	3	6
Total number of Informations	...	...	7	4	6
„	„	Convictions	4	4	6
Total Amount of Fines and Costs...			£3 0s. 0d.	£2 15s. 6d.	£8 7s. 0d.

### SEATS FOR SHOP ASSISTANTS ACT, 1899.

The object of the Act is to provide seats for female shop assistants.

Visits for the purposes of the Act	...	...	247
Found correct	...	...	231
Seats being provided	...	...	16

The above include the largest establishments in the City.

## FACTORY AND WORKSHOPS ACT, 1878—95.

The Inspectors appointed under the above Acts for sanitary purposes have visited a large number of Workshops, the summary of which is appended :—

### SUMMARY OF VISITS PAID TO WORKSHOPS. 1900.

Bamboo Workers.....	16	Marine Stores .....	850
Basket Makers .....	10	Mattress and Bed Makers .....	33
Block Makers .....	5	Metal Polish Makers .....	6
Bootmakers .....	144	Milliners .....	112
Bottlers .....	39	Mineral Water Manufacturers .....	40
Box Makers .....	10	Paint and Varnish Manufacturers..	5
Brassfinishers, &c. ....	12	Paper Cutters, &c. ....	17
Brick Makers .....	38	Paper Sorters .....	7
Brush Makers .....	35	Photographers .....	6
Cabinet Makers and Joiners .....	404	Pickle and Sauce Manufacturers ...	116
Canned Goods .....	14	Picture Framers .....	16
Cap Makers .....	5	Pipe Mounters .....	11
Carvers and Gilders.....	51	Plasterers .....	7
Chain Makers .....	6	Plumbers .....	52
Chair Makers .....	12	Rope Makers.....	9
Chemists' Sundries Manufacturers	12	Rubber Goods Manufacturers .....	9
Clog Makers .....	6	Sack and Bag Makers.....	85
Coach Builders.....	18	Saddlers .....	57
Confectioners .....	129	Sailmakers .....	16
Coopers .....	59	Sausage Manufacturers .....	7
Cork Cutters.....	11	Sign Writers.....	5
Cotton Sorters .....	33	Slipper Makers.....	21
Cycle and Bassinette Makers .....	38	Smiths .....	88
Dentists .....	5	Soap Boilers .....	10
Dressmakers .....	627	Stay and Corset Makers.....	7
Drysalts .....	22	Tailors .....	1,544
Enamellers .....	7	Tarpaulin Makers .....	9
Engravers... ..	16	Tinsmiths .....	14
Firewood Manufacturers .....	11	Trunk and Portmanteau Makers ...	17
Fish Curers .....	11	Underclothing Makers .....	148
French Polishers .....	52	Upholsterers .....	42
Furriers .....	7	Venetian Blind Makers .....	9
Galvanisers .....	31	Watchmakers and Jewellers .....	38
Ink Makers .....	13	Wheelwrights .....	53
Knitters .....	14	Wireworkers .....	16
Lamp Makers .....	7	Various .....	141
Lath Cleavers .....	8		
Laundries .....	545		
Leather Goods Manufacturers .....	10	Total.....	6,130
Marble Masons.....	12		

The number of visits paid to workshops, &c., the number and character of the Sanitary defects found, and the action taken, are indicated in the following table:—

					<u>1899.</u>			<u>1900.</u>
Visits to Workshops	...	...	...	...	6,189	...	...	6,130
Workshops found incorrect.	...	...	...	...	2,109	...	...	1,907
Number of Workrooms, dirty walls	...	...			597	...	...	573
„ „ „ ceilings	..				615	...	...	578
„ „ „ floors	...	...			49	...	...	18
„ „ „ urinals...	...				15	...	...	36
„ „ „ water-closets	...				119	...	...	119
„ „ „ lavatories	...				15	...	...	13
„ „ „ insufficiently ventila- ted, arising from structural defects or from want of attention	...	...			125	...	..	120
„ „ „ found overcrowded...					21	...	..	12
„ Defective Drains and Water- closets; also insufficient water- closet accommodation, and other nuisances...	...	...	...	...	494	...	...	487
„ Notices issued { upon Owners	...				191	...	...	247
„ „ { upon Occupiers	...				274	...	...	361
„ „ not complied with	...				4	...	...	0
„ Informations	...	...	...	...	9	...	...	14
„ Fined	...	...	...	...	6	...	...	9
„ of References to Government Factory Inspector...	...	...	...	...	72	...	...	59
„ „ to Building Surveyor					—	...	...	7
„ of References to City Engineer	...				—	...	...	6
„ „ Water Engineer	...				—	...	...	24
„ Workshops inspected, protected...					146	} 177	149 } 28	177
„ „ „ non-protected					31			
„ Workrooms measured	...	...			190	...	...	133
„ Workrooms closed owing to insani- tary conditions	...	...			1	...	...	6
Amount of Fines and Costs	...				£8 1 0		£7 15 0	
Separate closet accommodation provided for females in workshops where both sexes are employed	...	...	...	...	26	...	...	21
W.C. accommodation provided for males	...				13	...	...	10
Total	...	...	...		39			31

### SMOKE NUISANCES.

Proceedings for the abatement of Nuisances caused by the emission of excessive smoke from factory chimneys or from steamers, were taken under the Liverpool Sanitary Amendment Act, 1854, sections 24 and 25, and the Liverpool Improvement Act, 1882, section 77, with the following results:—

						<u>1899.</u>	<u>1900.</u>
Number of reports of excessive smoke from	Manufactories	...				471	416
„	„	„		Steamers in river		351	371
„	„	„		„ dock		52	50
	Total	...	...	...	...	<u>874</u>	<u>837</u>

Admonished by the Health Committee or written to in respect to nuisances caused by the emission of excessive smoke:—

Manufacturers	...	...	...	...	...	5	6
Steamers	...	...	...	...	...	7	6
	Total	...	...	...	...	<u>12</u>	<u>12</u>

				<u>1899.</u>		<u>1900.</u>	
Chief Inspector and Assistants gave	M'facturers	542	Cautions	537	Cautions		
„	„	„	Steamers	73	„	77	„
	Total...	...		<u>615</u>	„	<u>614</u>	„

Number of enquiries respecting Owners	<u>284</u>	<u>356</u>
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					<u>1899.</u>	<u>1900.</u>
Informations against	Manufactories	...	...	...	466	410
„	„	Steamers in river...	...	...	312	315
„	„	„ dock...	...	...	52	50
	Total	...	...	...	<u>830</u>	<u>775</u>
Acquitted or withdrawn, Manufactories	...	...	...	...	5	2
„	„	Steamer cases	...	...	7	10
	Total	...	...	...	<u>12</u>	<u>12</u>





From careful observations during the course of inspections, it has been found that the nuisance caused by the emission of excessive smoke from chimneys is due to the following causes:—

1. Improper construction of the furnaces, and the want of sufficient boiler room.
2. Inferior quality of the fuel used.
3. Improper firing and want of attention on the part of the stokers.

These causes are usually associated; even an improperly constructed furnace, if fed with a good quality of fuel and attended to by a careful and skilful man, can be so used as to avoid making unnecessary smoke, and, at the same time, the utmost amount of work of which it is capable can be obtained from it. A furnace of the best construction and fitted with the most approved appliances for preventing smoke, may, on the other hand, give rise to the greatest nuisance owing to improper attention and the use of poor fuel.

Mechanical stokers, many forms of which are now used by manufacturers, when properly used, effect a saving of 11 to 20 per cent. in the cost of the coal used, together with a considerable diminution of the quantity of smoke emitted from the chimney.

#### OFFENSIVE TRADES.

Applications for permission to carry on the following offensive trades were made during the year, and a report by the Medical Officer of Health on each application was submitted to the Health Committee:—

Premises.	Business.	Granted.	Refused.	Date, 1900.
Formby Street ...	Soap Boiling ...	1	—	31st May
Binn's Road ...	„ Manufactory ...	1	—	15th Nov.

In cases in which permission is granted, conditions are imposed requiring that the premises be put in proper order to the satisfaction of the City Engineer and the Medical Officer of Health, that no public nor private nuisance be caused, and that the business be discontinued whenever the Council shall so require.

The number of inspections of premises where offensive trades are carried on was 1,041, as against 1,012 in 1899.

Total No. of Visits to Bone Boilers...	...	...	...	...	97
„ Fell Mongers	...	...	...	...	37
„ Soap Boilers	...	...	...	...	183
„ Fat and Tallow Melters	...	...	...	...	288
„ Tripe Boilers	...	...	...	...	203
„ Gut Scrapers	...	...	...	...	105
„ Fish Skin Dressers...	...	...	...	...	16
„ Tanneries	...	...	...	...	44
„ Knackers' Yards	...	...	...	...	122
„ Paint and Resin Works	...	...	...	...	22
„ Stearine Works	...	...	...	...	4

KNACKERS' YARD RETURNS.

	Horses Destroyed.	Horses taken in Dead.	A ses Destroyed.	Cows Destroyed.	Other Beasts.
Holme Street ...	1,055	1,916	36	38	4

MARINE STORES.

						<u>1899.</u>	<u>1900.</u>
Number of Visits	...	...	...	...	...	1,111	889

MANURE YARDS AND WHARVES.

						<u>1899.</u>	<u>1900.</u>
Number of Visits	...	...	...	...	...	575	520

## S T A B L E S .

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The number of visits was 5,931. Conditions prejudicial to health arise from stables on account of defective construction, or of improper situation, or from neglect of lighting, ventilation and cleansing of the stables. Under existing legal powers, great difficulty is experienced in dealing with stables, and complaints are very frequent of nuisances occasioned by the causes indicated, the most frequent, perhaps, being neglect of cleanliness.

A large number of stables are either so defective, or so little care is taken of them, that the visits of the inspectors are necessary almost every day, in order that they may be under practically constant observation.

The Health Committee have endeavoured to procure adequate powers to deal with stables, and a clause was inserted in the Corporation Bill of 1898 to enable the Corporation to make bye-laws, (*a*) for regulating the lighting, ventilation, cleansing and draining of stables, whether erected before or after the passing of this Act; (*b*) for regulating the situation and mode of construction of stables within the City.

This exceedingly useful clause, the outcome of careful and deliberate consideration of the Health Committee, confirmed by the unanimous vote of the City Council, was thrown out at the town's meeting, by persons who gave no reason for their objection to it, and who probably had not considered the nuisances which the clause was intended to remove.

					<u>1899.</u>	<u>1900.</u>
Number of Visits to stables	...	...	...	...	7,967	5,931



## FEMALE SANITARY STAFF.

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The work of the female sanitary staff has been carried out upon the lines previously described, the greater portion of the time and attention of the female inspectors being devoted to house-to-house visitation, more especially to the homes of those of irregular and dirty habits, whilst considerable attention has been paid to the aged and infirm inmates of the poorer class of dwellings.

Many instances are reported in which improvement is attributed to the compulsory removal of families from insanitary dwellings which have been dealt with by the Housing Committee.

A large number of special investigations have been made into cases of fatal infantile diarrhœa, measles, whooping-cough, bronchitis and pneumonia, and instructions have been given to parents upon these matters.

Workshops in which women are employed are inspected systematically and upon complaint.

STATISTICS OF WORK OF FEMALE SANITARY STAFF.

						<u>1899.</u>	<u>1900.</u>
Number of Street Houses examined ...	...	...	...	...	...	20,040	17,190
„ Court „ „ ...	...	...	...	...	...	11,029	8,724
„ Cellars ...	...	...	...	...	...	3,577	1,435
„ Families found dirty ...	...	...	..	...	...	3,419	2,375
„ Re-visits to Families ...	...	...	...	...	...	27,474	27,119
„ Houses found dirty...	...	...	...	...	...	8,076	6,133
„ Cellars „ „ ...	..	..	...	...	...	778	389
„ Notices issued to cleanse dirty premises...						700	375
„ „ „ floors and woodwork }						119	131
„ References to Sanitary Inspectors ..						3,014	3,585
„ „ „ Lodging-house Inspectors...						25	87
„ „ „ Workshop Inspectors ...						61	24
„ „ „ Veterinary Department ...						6	—
„ „ „ City Engineer ...	...	...				47	68
„ „ „ Water Engineer ...	...	...				505	574
„ „ „ Building Surveyor ...	...	...				8	—
„ „ „ School Board ...	...	...				11	7
„ „ „ The Shelter, Islington ...	...	...				130	85
„ „ „ Relieving Officer ...	...	...				7	1
„ Sickness Enquiries (Children) ...	...	...				1,292	1,493

INFECTIOUS DISEASE IN SCHOOLS.

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It is of the utmost importance, in order to prevent the extension of infectious disease in schools, that, when sickness exists at the homes of the scholars, the earliest possible information shall be given to the Head Master, the Head Mistress, or Principal.

Usually the first intimation of such sickness is received by the Medical Officer, under the terms of the Notification Act, which, however, does not include measles and whooping-cough, both of which are liable to spread extensively amongst children of school age. These cases are notified by the school attendance officers, by inspectors, by parents, by doctors, and others. It is part of the duty of the district inspector to forthwith warn the parents, or those in charge, that the children must be kept from school until fourteen days after the necessary disinfection has been carried out. The inspector leaves a postcard at the house, addressed to the Medical Officer of Health, to be filled up and forwarded by the parent or other responsible person, as soon as the doctor in attendance states that the disinfection may be proceeded with.

The information obtained by the inspector is duly entered in a permanent register, and also sent by postcard the same day to the Head Master of the school the children attend if it is a Board School, or to the Principal in the case of a Private School.

When the source of infection is removed (either by removal of the patient to hospital, or by the recovery or death of the patient), the house and bedding are disinfected by the officers of the Public Health Department.

At the expiration of a fortnight from the date of disinfection, the school visitor is notified to visit the house, and if no sickness of any kind has occurred in the interval intimation is sent to the Head Teacher of the school to re-admit the children.

In the case of measles and chicken-pox, disinfection is carried out with the consent of the occupier of the house; the children are not allowed to return to school until a fortnight after the sickness has ceased to exist.

In cases of whooping-cough, ringworm, &c., only the affected child is kept from school. Ringworm, scabies, and ophthalmia may last indefinitely unless properly dealt with, and no child with any trace of these diseases should be admitted to school.

The notices sent to the schools for the purpose of notifying the existence of infectious disease at the home of a pupil are accepted by the Government Education Department, also by the Liverpool Council of Education, as a valid reason for the non-attendance of the children at school, and qualify them to receive any benefits which regular attendance would have entitled them to.

When necessary, a certificate is furnished to the school authorities, stating that the pupil was absent on account of infectious sickness at home.

It must be borne in mind that the methods now described are directed to the suppression of infectious disease, and although the child may be free from infection, and therefore, so far as the risk of infection is concerned, may with perfect safety return to school, yet it must be remembered that the child may not be sufficiently recovered physically to undertake at once the full work and discipline which attendance at school entails.

The permission of the Health Department to return to school, therefore, implies nothing further than freedom from infection.

It may be regarded as a rule, that all children suffering from an infectious disorder should be excluded from school so long as they are likely to retain any infection; this condition is one which may involve exclusion for some time after the patient is apparently convalescent.

It is equally necessary that children coming from houses, any inmate of which is suffering from infectious sickness, should also be excluded, because in the great majority of instances, if not in all of them, it is impossible to effectually isolate a case of infectious sickness in an ordinary household, especially within the homes of children of the class who attend the public elementary schools.

Hardship really is minimised by a careful application of the powers to exclude individual scholars, because unless this is attended to it is quite possible that disease may rapidly spread to an extent which would render it necessary to close the school altogether.



It is extremely difficult, if not impossible, to lay down absolute rules as to when, and for how long a time, schools should be closed. The nature of the disease, its character, the numbers of the pupils affected, will all be factors in determining the point, as well as the nature of proof that the sources of infection are actually at the school.

It is plain, for example, that if 10 per cent. of the children attending a school are absent on account of typhus fever, the aspect is more grave than if the same number of children are absent from measles, and the more formidable character of the one form of disease would call for more stringent action than in the case of the other; yet in either case it would be necessary to adopt as rigorous means as possible to exclude scholars from infected houses in the first instance, and it would probably be found in that way that the disease would be checked without resorting to closure of the school.

Much depends upon the amount and the promptness of the information which the Medical Officer of Health is able to gain in regard to the circumstances of the school children and their homes: and the promptness with which action can be taken.

The existence of infectious disease in a locality is by no means *per se* to be looked upon as a ground for closing the schools, and again still less is the existence of isolated cases of sickness amongst the pupils.

What applies to public elementary schools (Board Schools and Denominational Schools) also applies to Sunday Schools and private schools. Although these latter establishments are not subject to the same regulation by the Sanitary Authority as the others, yet the Public Health Act does make certain provisions which are applicable to schools of every kind, and the managers of these establishments are as a rule perfectly willing to act upon the suggestions which the Sanitary Authority may find it necessary to offer.

When it does become expedient to close schools it is desirable that the time specified should be a minimum, because if it appears necessary a notice extending the period can be given before the expiration of the time originally stated.

As regards the influence of school closure upon the prevalence of sickness, as indicated by the numbers of cases reported to the Medical Officer of Health, it is interesting to note the experience of the last four years in Liverpool in regard to Measles among children attending elementary schools. The subjoined table indicates the number of cases reported during one month *before* the holidays, and one month *after* the holidays, precisely the same machinery for notification being in force in each period. It would also appear that the longer the holidays the greater the effect in lessening the prevalence of the sickness.

Summer holidays.	DURING—	Cases of measles reported.	Winter holidays.	DURING—	Cases of measles reported
1896.	One month before the holidays ...	283	1896.	One month before the holidays ...	143
	One month after the holidays ...	35		One month after the holidays ...	115
1897.	One month before the holidays ...	991	1897.	One month before the holidays ...	403
	One month after the holidays ...	131		One month after the holidays ...	171
1898.	One month before the holidays ...	452	1898.	One month before the holidays ...	205
	One month after the holidays ...	137		One month after the holidays ...	75
1899.	One month before the holidays ...	1325	1899.	One month before the holidays ...	501
	One month after the holidays ...	182		One month after the holidays ...	217
<i>Average of 4 years.</i>					
	One month before the holidays	763		One month before the holidays ...	313
	One month after the holidays ...	121		One month after the holidays ...	144

The summer holidays extend to about five weeks; the winter holidays from a fortnight to three weeks.

NOTICES TO MASTERS OF SCHOOLS AND LIBRARIANS.

Arrangements have been made with the School Board that postcards shall be sent to the Board and to the Head Masters of the various schools informing them when children from infected houses attend their schools. 6,533 cards were sent last year, as against 6,448 in the preceding year.

Books borrowed from Lending Libraries which have been found in infected houses have been taken to the Disinfecting Station, and either destroyed or disinfected and returned. In the case of books which have been destroyed, compensation has been paid under the Public Health Act.

PUBLIC ELEMENTARY SCHOOLS.

VISITS MADE BY SANITARY INSPECTORS.

	<u>1899.</u>	<u>1900.</u>
No. of Visits to Schools ... ..	2,685	2,969
„ Waterclosets and Latrines found dirty or defective	222	150
„ Notices issued for defects .. ...	79	82
„ „ „ dirty closets ... ..	20	32

Owing to the prevalence of measles 13 schools were closed during the year, principally in October, November, and December, for a period of 21 days.

Closure of schools is found to be a very effectual way of checking the spread of measles, and the influence of school holidays in this connection is always very marked.



### THE AMBULANCE AND DISINFECTING STAFF.

The following table shews the number of patients removed by Officers of the Ambulance Staff, and the Hospitals to which they were taken :—

City Hospital North, Netherfield Road.	City Hospital South, Grafton Street.	City Hospital, Park Hill.	Brownlow Hill.	City Hospital East, Mill Lane.	City Hospital, Priory Road.	Northern Hospital.	Royal Infirmary.	Smithdown Road.	Southern Hospital.	Walton Workhouse.	Stanley Hospital.	Total.
773	558	498	102	219	124	3	5	18	5	1	1	2,307

For the removal of patients to hospital, and for the removal of infected bedding, and its return after disinfection, an adequate ambulance staff is maintained.

Four ambulance carriages are in use for the different forms of infectious disease. Bedding and clothing, after disinfection, are taken home by a staff and conveyance entirely distinct from that which removed them in the infected state.

All cases of Smallpox and all cases of Typhus Fever, with very rare exceptions, are removed to Hospital, and a special Inspector revisits the house from whence the patient was removed to ascertain whether any further sickness has developed. These inquiries are made daily for 14 days and at intervals of a day or two during the following fortnight, and any case of sickness, however trifling it may appear to be, is at once reported and visited by a medical man. Friends of the patient, and others who are known to have been directly or indirectly in contact with him are also visited at their homes. By these inquiries, persons who may be incubating the disease are discovered and removed to the hospital at the earliest possible stage, and often before any



serious risk of infection has arisen. Without these inquiries, which have occasioned no inconvenience to anyone, the patients would have remained at home for a longer period, constituting centres of infection to the neighbourhood, and it is largely to systematic inquiry and supervision, and the promptness of action taken upon available information, that the City owes the continued immunity from formidable kinds of infectious disease. The absence of friction indicates the care and intelligence exercised by the Inspectors in carrying out this system (see pages 20 and 23).

The collection, removal, disinfection and return of infected bedding has been carried on as hitherto by the Ambulance Staff.

It has been found that in many instances in which compensation for clothing had been given in money to the poorer classes of people, that the money was spent in drink, and the people left without clothing. As a consequence of this, an arrangement was made with a firm of repute, to supply articles equivalent in value to those which had been destroyed, thus preventing an improper use of the money. There were difficulties incidental to this method, and the present plan is to keep at the dépôt a stock of mattresses, bedding, &c., and to give it out to suitable applicants, whose clothing or bedding have been destroyed on account of infection, under the Public Health Act.

Owing to the delays and difficulties which arose from time to time in causing compliance with notices served upon owners to strip the wall-paper from the walls of infected rooms, this work has been undertaken by the Disinfecting Staff.

As soon as the infected wall-paper has been stripped, and the house ready for re-papering or other work, an intimation of the fact is sent to the owner.

In all cases of infectious disease the houses were disinfected by a trained staff, free of cost, with sulphurous gas; but whenever there was sickness in any room of the house, disinfectants were given to the tenants for use in the sick room until the sulphurous gas could be used safely. No house is considered properly disinfected until sulphurous gas has been used, and the wall-paper, previously sprayed with solution of perchloride of mercury, stripped. The wall-paper is conveyed in sacks, specially

provided for the purpose, to the refuse-destroyer and burnt. The existence of infectious sickness necessitates many visits by the persons in charge of disinfection, as the householder frequently omits to send information when the premises are ready. There were in all 6,907 visits paid during the year to houses for the purpose of disinfection, the number of houses completely disinfected being 3,373.

#### INFECTED HOUSES.

						<u>1899.</u>	<u>1900.</u>
Number of Infected Street Houses Inspected	...					3,481	3,063
„ „ Court „ „	...					194	146
„ „ Cellars „	...					53	26
„ „ Houses Re-inspected ..	...					95	180
„ Notes to Owners to Cleanse ...	...					2,837	2,807
„ Notices to Occupiers „ ...	...					283	204
„ Enquiries ... ..	...					17,206	19,131

There is a decrease of about 493, compared with the preceding year, in the number of houses requiring to be dealt with on account of infection.

#### INFECTED PREMISES CLEANSED BY DISINFECTING STAFF.

								<u>1899.</u>	<u>1900.</u>
Houses	...	..	...	...	..	...	...	4,341	5,152
Rooms	...	..	...	...	...	...	...	8,282	12,646

There is an increase of 3,364 rooms stripped by the Disinfecting Staff, as compared with the previous year. This is owing to the stripping by the Disinfecting Staff of dirty rooms in which Measles, Mumps, &c., had occurred.

THE DISINFECTING APPARATUS.

The number of articles disinfected at the various Apparatus during the year amounted to 159,610.

DATE. 1900.				Number of Beds.	Number of Mattresses.	Number of Pieces of Bedding.	No. of Pieces of Wearing Apparel, &c.	Total Number of Articles.
January	...	...	...	337	134	2,405	4,371	7,247
February	...	...	...	258	108	1,872	920	3,158
March	...	...	...	696	189	9,178	16,879	26,942
April	...	...	...	673	155	21,828	25,488	48,144
May	...	...	...	331	193	1,989	728	3,241
June	...	...	...	405	165	2,681	8,175	11,426
July	...	...	...	487	137	2,544	3,673	6,841
August	...	...	...	230	161	1,503	969	2,863
September	...	...	...	484	265	9,517	8,723	18,989
October	...	...	...	421	212	2,755	1,031	4,419
November	...	...	...	450	149	2,787	7,721	11,107
December	...	...	...	636	253	5,192	9,152	15,233
Totals	...	...	...	5,408	2,121	64,251	87,830	159,610

The number of articles destroyed at the various Apparatus during the year amounted to 727, compensation being paid in conformity with the provisions of the Public Health Act.

DATE. 1900.				Number of Beds.	Number of Mattresses.	Number of Pieces of Bedding	No. of Pieces of Wearing Apparel, &c.	Total Number of Articles.
January	...	...	...	9	2	4	21	36
February	...	...	...	3	2	0	0	5
March	...	...	...	8	16	27	13	64
April	...	...	...	9	26	20	18	73
May	...	...	...	19	34	17	14	84
June	...	...	...	23	40	24	31	118
July	...	...	...	9	25	7	3	44
August	...	...	...	3	12	0	0	15
September	...	...	...	20	32	36	114	202
October	...	...	...	10	16	7	0	33
November	...	...	...	9	4	4	0	17
December	...	...	...	10	22	4	0	36
Totals	...	...	...	132	231	150	214	727



PRINCE'S DOCK MORTUARY.

The Mortuary at the Prince's Dock is for the reception of the bodies of persons who have been drowned, killed, &c., and upon which the Coroner desires to hold inquests. Bodies are taken to this Mortuary by the police, and when it may be necessary to make post-mortem examinations, any medical gentleman may have the assistance of an inspector on sending a communication to the Ambulance Superintendent, 54, Gascoyne Street.

BODIES REMOVED TO THE PRINCE'S DOCK MORTUARY.	
Number from River.	Number from City.
0	174

FORD STREET MORTUARY AND DISTRICT MORTUARIES.

BODIES REMOVED TO MORTUARIES.						
Green Lane.	Lark Lane.	Wavertree.	Ford Street.	Park Hill.	Walton Village.	TOTAL.
7	2	...	269	...	...	278

The Mortuary in Ford Street was opened for the reception of bodies, which could not be kept at the homes in which death had taken place, without injury to the health of other inmates. The address of the caretaker is 65, Gascoyne Street.

The District Mortuaries, it will be seen, are seldom used. For the convenience of juries, as well as for other reasons, it is preferable that bodies should be conveyed to the Central Mortuaries.

CREMATORIUM.

The Crematorium in Anfield Cemetery is availed of by an increasing number of persons as a means of reverent disposal of the dead by cremation, but the system has not yet found the favour which it does in many important centres of population throughout Europe. The building is of attractive appearance, and the surroundings are appropriate.



PROCEEDINGS UNDER THE DISEASES OF ANIMALS ACT, 1894.

The duties of the Inspectors under the Diseases of Animals Act, 1894, are to visit cattle steamers, both foreign and cross-channel, for the purpose of seeing that the provisions of the Foreign Animals Order, 1895, and the Animals Transit Order, 1895, are carried out.

Cattle steamers are examined as to fittings, ventilation, &c., and supervision is exercised in regard to cleansing and disinfection after animals are landed. Overcrowding or injury to animals is reported.

Cattle trucks and horse boxes are examined at railway stations, as to fittings, cleansing and disinfection, and the railway pens supervised.

Lairages and sale yards are visited to ascertain that they are cleansed and disinfected in accordance with the regulations of the City Council.

The Diseases of Animals Act relates in the main to certain diseases communicable amongst cattle, sheep and swine, and provides for the separation of diseased animals from healthy ones, for the disinfection and cleansing of vessels, trucks, &c., in which animals have been carried, and it defines the action to be taken to limit and prevent the extension of disease. It also deals with certain forms of disease communicable by animals to man.

The Board of Agriculture, under the powers of this Act, issue orders from time to time dealing with diseases of animals, or with their protection during transit. The Board also prescribes the manner under which animals may be imported or moved from place to place.

The accompanying table gives the statistics of the proceedings taken under the Act or under the Orders of the Board of Agriculture:—

					<u>1899.</u>	<u>1900.</u>
Number of Visits to Railway Stations, including inspections made on Sundays	...	...	...	...	2,566	2,755
„ Inspections of pens	...	...	...	...	90,880	97,721
„ found clean	...	...	...	...	67,029	73,060
„ „ dirty and cleansed before being used.					23,851	24,661
„ Inspections of Trucks...	...	...	...	...	39,276	40,627
„ found clean	...	...	...	...	36,159	36,348
„ „ dirty and cleansed before being used, or leaving the City dirty	...	...	...	...	3,117	4,279

	<u>1899.</u>	<u>1900.</u>
Number of Inspections of Horse Boxes ... ..	1,012	1,250
„ found clean ... ..	760	840
„ „ dirty and cleansed before being used, or leaving the City dirty ... ..	252	410
„ Inspections of Vessels... ..	8,944	8,678
„ found clean ... ..	3,393	3,570
„ „ dirty and cleansed before being used, or going to Sea without cattle or cargo ... ..	5,551	5,108
„ Informations for dirty vessels used before being cleansed ... ..	1	—
Number of Inspections of Gangways ... ..	8,948	8,910
„ found clean ... ..	7,404	7,411
„ „ dirty and cleansed before being used	1,544	1,499
„ Inspections of Lairage and Sale Yards ...	4,554	4,830
„ found clean ... ..	3,389	3,598
„ „ dirty and cleansed before being used	1,165	1,232
„ Informations for landing broken fodder ...	1	—
„ „ „ not cleansing trucks before being used ... ..	—	5
„ „ „ not providing battens on footholds for pens on vessel	—	1
Total Number of Informations ... ..	2	6
„ Fined ... ..	2	6
Amount of Fines and Costs ... ..	£2 4s. 6d.	£5 9s. 6d.

INSPECTION OF SLAUGHTER-HOUSES, &c. 1899. 1900.

Number of Visits to Slaughter-houses made by Meat Inspectors ... ..	9,524	9,256
Number of Visits to Butchers' Shops made by Meat Inspectors ... ..	70,384	68,884
Number of Visits to Fish and Fruit Shops made by Fish Inspectors ... ..	55,754	91,313
Number of Visits to Fruit Shops made by Fruit Inspector ... ..	5,437	16 356
Number of Visits to Poultry Dépôts made by Fish Inspectors ... ..	285	310

FISH PLATFORMS.

	<u>1899.</u>	<u>1900.</u>
Number of Visits .. ...	35	23

RETURNS OF ANIMALS KILLED IN THE CITY SLAUGHTER-HOUSES,  
AND OF MEAT IMPORTED FOR SALE

As compared with the numbers in the preceding year, which showed some considerable rise, there is a decrease of nearly 600 in the number of cattle slaughtered in the city abattoirs and slaughter houses in 1900, and there is a decrease of 3513 in the number of carcasses imported for sale.

With regard to sheep, there is an increase over the preceding year of nearly 6,800 in the number killed in the city, and a decrease of over 12,800 in the number of carcasses imported for sale.

These numbers usually fluctuate in an inverse relationship; a falling off in imports probably resulting in a greater demand and better price for home produce. Many butchers purchase direct from the abattoirs at Woodside, and this circumstance also goes to explain decreasing quantity of importations into Liverpool.

In regard to pigs the increase last year was excessive, and 1900 showed a decrease of over 1,600 in the number slaughtered within the city, as compared with the year 1899, and a decrease of nearly 6,900 in the carcasses imported for sale.

STREET.	Beasts	Sheep.	Lambs.	Calves.	Pigs.	Dead Meat Imported for Sale.			
						Beasts.	Sheep.	Pigs.	Calves.
Abattoir.	5358	176878	—	13453	48277	46905	389316	29362	1156
Back Butler Street ... ..	84	175	51	12	...	...	...	...	...
Back Castle Street ... ..	823	386	9	302	3	16	...	...	...
Back Mount Vernon Green...	402	3459	...	7	...	...	...	...	...
Cotter Street ... ..	117	...	...	55	1218	...	...	...	...
Corlett Street ... ..	27	1102	364	5	1	...	...	...	...
Crown Street ... ..	13	53	20	...	...	...	...	...	...
Darnley Street ... ..	...	...	...	...	1902	...	...	...	...
Edgeware Street ... ..	1	...	...	...	...	...	...	...	...
Foley Street ... ..	...	...	...	...	7891	...	...	...	...
Peel Street ... ..	68	785	59	...	77	...	...	...	...
Bevington Hill ... ..	1147	71	...	1035	41	48	...	...	...
Carried forward ... ..	2682	6031	506	1416	11133	64	...	...	...



RETURNS OF ANIMALS KILLED IN THE CITY SLAUGHTER HOUSES  
AND OF MEAT IMPORTED FOR SALE—*Continued.*

STREET.	Beasts.	Sheep.	Lambs.	Calves.	Pigs.	Dead Meat Imported for Sale.			
						Beasts.	Sheep.	Pigs.	Calves.
Brought forward ...	2682	6031	506	1416	11133	64	...	...	...
Byrom Street ... ..	...	...	...	...	15	...	...	...	...
Bolton Street ... ..	42	2720	394	4	...	...	...	...	...
Back Commutation Row .....	178	1312	189	...	...	...	...	...	...
Copperas Hill.....	...	...	...	...	9494	...	...	...	...
Finch Place .....	18	1127	304	...	...	...	...	...	...
Frederick Street.....	19	2	39	3	7	...	...	...	...
Norman Street .....	...	...	...	...	2326	...	...	...	...
Norfolk Street .....	10	275	70	4	23	...	...	...	...
Soho Street.....	...	...	...	...	1445	...	...	...	...
Upper Milk Street.....	...	...	...	...	6382	...	...	...	...
West Derby Road, W. Derby	96	1616	337	1	69	...	...	...	...
Prescot Road, Knotty Ash ...	15	541	195	31	39	1	...	...	...
101, High Street, Wavertree..	2	66	1	...	...	...	...	...	...
105,       ,,       ,,	80	203	75	9	22	...	...	...	...
Sandown Lane .....	17	379	38	6	28	...	...	...	...
Derby Lane, Old Swan.....	10	756	75	...	...	...	...	...	...
Allerton Road, Wavertree ...	670	5169	26	66	77	...	...	...	...
Total in Private Slaughter-houses .....	3839	20197	2249	1540	31060	65	...	...	...
Total in the City .....	9197	197075	2249	14993	79337	46970	389316	29362	1156

PRECEDING YEAR.

Total in Private Slaughter-houses .....	4170	22008	3887	1443	31970	87	...	6	...
Total in the City .....	9763	190328	3887	14565	80942	50483	402160	36227	920

There was only one application for a transfer of license during the year, viz. :—  
No. 76, Soho Street ; granted 19th July.



UNWHOLESOME MEAT, FISH, &c., SEIZED AND DESTROYED.

DATE.—1900.		Beef.	Veal.	Mutton.	Pork.	Poultry.	Rabbits and Hares.	Fish.	Shell fish.	Oysters.	Miscellaneous.
		Lbs.	Lbs.	Lbs.	Lbs.	Head		Lbs.	Bags		
MARKETS.	St. John's .....	2010	307	94	448	949	783	49321	55	5550	{ 68 lbs. Straw-berries 90 Melons 250 lbs. Venison 2800 Bananas
	St. Martin's .....	68	...	40	224	...	...	...	...	...	
SLAUGHTER-HOUSES.	Abattoir .....	61989	7886	15501	13786	...	...	...	...	...	...
	Back Castle Street ...	48953	2291	100	83	...	...	...	...	...	...
	Bevington Hill .....	43868	3791	372	...	...	...	...	...	...	...
	Copperas Hill .....	...	...	...	1583	...	...	...	...	...	...
	Norman Street .....	...	...	...	210	...	...	...	...	...	...
	Soho Street .....	...	...	...	...	...	...	...	...	...	...
	Allerton Road .....	720	...	...	...	...	...	...	...	...	...
	Brunswick Station ...	...	...	...	...	...	...	12320	...	...	...
	Cases Street .....	...	...	...	...	...	...	5000	...	...	...
	County Road.....	...	...	...	105	...	...	...	...	...	...
	Currie Street .....	...	...	15	...	...	...	...	...	...	...
	Duke's Dock .....	...	...	...	445	...	...	...	...	...	...
	Eastbourne Street ...	64	...	...	...	...	...	...	...	...	...
	Edge Hill Station.....	...	...	...	224	...	...	85	...	...	{ 6851 lbs. Plums 512 „ Tomatoes 4976 „ Pears 150 „ Water cress
	Finch Place .....	12	...	...	...	...	...	...	...	...	
	Foley Street .....	...	...	...	576	...	...	...	...	...	...
	Frederick Street .....	...	...	62	...	...	...	...	...	...	...
	George's Pierhead ...	2520	...	...	...	...	...	...	...	...	...
	Great Charlotte Street	...	...	...	...	...	...	14277	...	...	141bs. Raspberries
Carried forward...		160204	14275	16184	17684	949	783	81003	55	5550	

UNWHOLESOME MEAT, FISH, &c., SEIZED AND DESTROYED.—*Continued.*

DATE. — 1900.	Beef.	Veal.	Mutton.	Pork.	Poultry.	Rabbits and Hares	Fish.	Shell fish.	Oysters.	Miscellaneous.
	Lbs.	Lbs.	Lbs.	Lbs.	Head		Lbs.	Bags		
Brought forward ...	160204	14275	16184	17684	949	783	81003	55	5550	...
Great Homer Street ..	114	...	...	...	...	...	168	...	...	...
Islington .....	13	...	73	...	...	...	...	...	...	...
London Road.....	...	...	...	20	...	...	...	...	...	...
Lime Street .....	112	...	...	150	...	...	...	...	1000	...
Mere Lane.....	...	...	...	240	...	...	...	...	...	...
Moor Place.....	...	...	...	1632	...	...	...	...	...	...
North Haymarket ...	...	...	...	...	...	...	...	...	...	5580 lbs. Apples 210 „ Sprouts 5160 „ Oranges 53188 „ Turnips 294 „ Cherries 30 „ Straw-berries 25596 „ Potatoes 1120 „ Melons 60 „ Tomatoes 3080 „ Grapes 438 „ Goose-berries 6682 „ Plums 7400 „ Pears 40 „ Bananas 560 „ Onions
Park Road.....	150	...	...	...	...	...	...	...	...	...
Pitt Street.....	...	...	...	...	...	...	10752	...	...	...
Queen's Square .....	...	...	...	...	...	...	...	...	...	12152 lbs. Carrots 144 „ Cherries 320 „ Bilberries 85 „ Straw-berries 56 „ Chesnuts 12602 „ Plums 3540 „ Pears 156 „ Goose-berries 163 „ Tomatoes
Roe Street .....	...	...	...	...	...	17	1790	...	...	...
Roscommon Street ...	105	...	40	...	...	...	...	...	...	...
Rose Street .....	...	...	...	...	257	495	17727	6	3000	...
Russell Street .....	366	...	...	...	...	...	...	...	...	...
Scotland Road .....	4336	...	423	...	...	...	...	...	...	...
Stanley Street .....	30	...	...	...	...	...	...	...	...	...
Tryon Street .....	50	...	...	239	280	...	...	...	...	...
Carried forward...	165480	14275	16720	19965	1486	1295	111440	61	9550	

UNWHOLESOME MEAT, FISH, &c., SEIZED AND DESTROYED.—Continued.

DATE.—1900.	Beef.	Veal.	Mutton.	Pork.	Poultry.	Rabbits and Hares.	Fish.	Shell-Fish.	Oysters.	Miscellaneous.
	Lbs.	Lbs.	Lbs.	Lbs.	Head		Lbs.	Bags.		
Brought forward...	165480	14275	16720	19965	1486	1295	111440	61	9550	
Upper Milk Street ...	...	...	...	176	...	...	...	...	...	...
Vauxhall Road .....	...	...	...	...	...	...	...	...	...	680 lbs. Grapes
Walton Breck Road...	...	...	...	...	3	...	...	...	...	...
Total .....	165480	14275	16720	20141	1489	1295	111440	61	9550	

The total amount of Meat and Fish found to be unfit for human food is equivalent to—

			Tons.	Cwts.	Qrs.	Lbs.
Meat	...	...	96	14	0	8
Fish	...	...	49	15	0	0

and this does not include Fish removed as refuse by Officers of the Cleansing and Scavenging Department under the City Engineer.

The total amount of unwholesome meat which has been seized and destroyed during the year amounts to upwards of 96 tons.

The great bulk of this meat was not exposed for sale, and did not require a Justices' order for its destruction.

The quantity of fish seized amounted to nearly 50 tons, and includes both fresh fish and salt fish which had become tainted during transit or storage, a regrettable waste of food.

ANIMALS SMOTHERED AND INJURED IN TRANSIT ON BOARD SHIP.

Beasts.	Sheep.	Pigs.	Number found good.	Number found bad.	Weight of bad in pounds.
20	108	226	303	51	7,683

The Animals (Transit and General) Order compels the master of the vessel to slaughter all seriously-injured animals forthwith. Such animals are slaughtered on board the vessel, and the carcasses removed to the abattoirs.

Police proceedings in respect to meat and fish and fruit were as follows:—

	1899.	1900.
Number of informations in respect to Diseased Meat	9	8
„ „ „ Fish	4	1
„ „ „ Fruit	17	13
„ Fined ... ..	19	20
„ Sent to Gaol ... ..	—	—
Amount of Fines and Costs ... ..	£119 9 0	£90 8 9

	1899.	1900.
Number of carcasses seized during the year by Medical Officer of Health and Inspectors under section 116 of the Public Health Act ... ..	1,162 { 296 Cattle 219 Calves 444 Sheep 203 Pigs.	266 Cattle 202 Calves 342 Sheep 97 Pigs 2 Goats } 909
* Number of such carcasses condemned by Justices under section 117 of the Public Health Act ... ..	1	2
Number of carcasses so seized in consequence of the animal having suffered from Tuberculosis .. ..	141	139
Amount of Fines and Costs ... ..	£2 0 0	£16 7 0

REMOVING PIGS WITHOUT A DECLARATION.

	1899.	1900.
Number of Informations ... ..	2	—
Amount of Fines and Costs ... ..	£2 9 0	—

\*The remainder were dealt with under a Local Act, which does not require a Justices' Order.



## GLANDERS AND FARCY.

The Diseases of Animals Acts and the Order and Regulations made thereunder have been referred by the Health Committee to the Medical Officer of Health to carry out, in conjunction with the Veterinary Inspector and Sanitary Staff.

Prior to the passing of the Diseases of Animals Act, and the Glanders and Farcy Order of 1894, the record of the number of cases of glanders occurring in the city is wholly unreliable. The number of cases reported during each of the three years preceding the Order is as follows:—

1893	...	2 cases.
1894	...	3 „
1895	...	1 case.

Early in 1896, under the principal Act, and the Glanders and Farcy Order, the Health Committee made regulations which were circulated amongst horsekeepers, together with a notice indicating general precautions against glanders.

The number of cases of glanders which were brought to light during each of the five years, 1896, 7, 8, 9, and 1900, is as follows:—

CASES.							
1896	...	40	...	5	brought into the city from outside.		
1897	...	18	...	2	„	„	„
1898	...	9	...	1	„	„	„
1899	...	20	...	4	„	„	„
1900	...	5	...	1	„	„	„

In giving effect to the Act the following procedure is usually adopted:—

Information of actual or suspected disease is usually received, under the terms of the Order

(A) from the owner;

(B) from the Police;

(C) from the proprietor of the registered knacker's yard.  
(There is only one in the city.)

Immediately upon receipt of such information, or as speedily thereafter as possible, the Veterinary Surgeon examines the animal, and if he finds it to be infected with glanders he certifies accordingly. The horse is slaughtered on the premises where it is found, and the carcase, head-stall, clothing, &c., removed in the knacker's cart in charge of an inspector appointed under the Act, a member of the staff of the Medical Officer of Health, to the knacker's yard, Holme Street, where, if necessary, a post-mortem examination is made.

The inspector attends to see that the carcase is destroyed. Carbolic acid is poured over the carcase, which is subsequently placed in a digester, with a certain amount of carbolic acid, and destroyed by boiling. The knacker's cart is thoroughly washed and cleansed in the inspector's presence.

In the meantime, another inspector, also similarly appointed, visits the premises, immediately notice is received of the existence of glanders in any place in the city, for the purpose of supervising the disinfection and cleansing of the stables and manure. All fodder and litter that have been in contact with the diseased animal, or in the stall adjoining, are removed and placed in the middenstead, and a quantity of quicklime is thrown over the manure, after which a quantity of carbolic acid and water is thrown over the lime.

A certificate is then signed in accordance with Article 12 of the Glanders Order, for the removal of the manure. The parts of the stable from which the horse has been removed are washed with hot water, and disinfected by hot limewashing, with limewash mixed with carbolic acid. The Veterinary Surgeon, after this has been done, gives a certificate certifying that the stable has been thoroughly cleansed and disinfected in accordance with the requirements of Article 10, Regulation C.

Powers are wanted in regard to the detention and supervision of animals which have been in contact with diseased animals, and it is most desirable that the owners of animals which have been so exposed should be prohibited from parting with them or selling them, excepting under such conditions as would enable them to be traced and kept under observation.

It is most necessary that the notification of glanders by Veterinary Surgeons should be made compulsory.

Veterinary examinations, by request of Board of Agriculture, of horses imported from the American Continent.

Horses Examined.	Horses found affected with			
	Glanders.	Pneumonia.	Strangles.	Pink Eye.
7,373	...	444	122	41

In addition to those referred to in the foregoing table, 14,880 horses, some of which were landed beyond the city boundaries, have been examined and re-examined at the various sale yards, with a view to the maintenance of the general health of the animals in the city.

The imported animals were on the whole in a very good condition, and the mortality small; and no evidence of contagious disease was found.

The number of cases of Glanders detected in 1900 shows a very considerable decrease on those for 1899. Glanders and Farcy have been found to exist on 4 premises, 9 reports of suspicious cases were received, 402 animals were examined. Of these 3 were condemned and destroyed as being affected with Glanders and Farcy, and 2 slaughtered by order of owner. Compensation was paid to the owners of 3 animals destroyed by order of the Local Authority.

Animals Examined.	Affected.	Suspicious.	Not Affected.
402	5	8	397

Total Number of Animals in Stables, &c., where the Disease occurred.	SLAUGHTERED.		Died.
	By Order of Owner.	By Order of Local Authority.	
152	2*	3	...

\* One of these was brought into city from Bootle.

LUNGS OF HORSES EXAMINED AT KNACKER'S YARD, HOLME STREET,  
SANDHILLS.

During the year 1900 the Veterinary Superintendent has caused the lungs of all horses sent to the above premises to be examined. In every instance where there was evidence of the disease manifested in the lungs, the owners of the animals were notified, and if within the city boundaries, the remainder of their studs were subjected to veterinary examination. In cases where the existence of Glanders or Farcy is capable of detection during the life of the animal, proceedings are taken against the responsible persons.

Lungs Examined.	Glandered.	Not Affected.
2,701	2	2,699



ANTHRAX.

There were three cases of Anthrax reported during the year. In each of the cases the animal was slaughtered. A portion of the spleen was submitted to Professor Boyce, University College, who certified that the animal from which it was taken was affected with Anthrax. The usual disinfection was carried out in each case.

Date. 1900.	Total number of Animals in Shippon where disease occurred.	Locality.	Died.
Jan. 2nd.....	12	No. 1, Woodland Road, Walton.	1
Sept. 17th...	9	No. 1, Lower Breck Road.....	1
Oct. 31st ....	13	No. 3, Grierson Street.....	1

PLEURO-PNEUMONIA.

There was no case reported during the year.

RABIES.

In conformity with the requirements of the Board of Agriculture, reports were sent to the Board in respect to 20 suspected cases of rabies. Bacteriological examination was made in all the cases, and *post mortem* examinations were made by the Veterinary Inspectors. There were no signs that any of the animals had been affected with rabies.

SHEEP SCAB.

The Veterinary Inspector, on September 3rd, found one sheep affected with Sheep Scab at the Stanley Cattle Market. It, along with 17 others which had been in contact, were removed to the Liverpool Abattoir, and there slaughtered by order of the owner.

SWINE FEVER.

The following table shows the number of animals affected with swine fever and the number in the herds slaughtered under the Swine Fever Order.

Total Number in Herds.	HEALTHY.		DISEASED.		Died.	Locality.	Remarks.
	Slaughtered.		Slaughtered.				
	By Order of Owner	By Order of Board of Agriculture.	By Order of Owner.	By Order of Board of Agriculture.			
31	...	...	1	6	...	Fir Grove, West Derby.	24 remaining healthy when ultimately declared free.
21	...	11	...	9	1	Leyfield Schools, West Derby.	
2	...	...	...	...	1	“Holmstead,” Mossley Hill.	1 remaining healthy when ultimately declared free.

PIGGERIES.

						<u>1899.</u>	<u>1900.</u>
Number of applications to keep pigs	...	..				4	15
„ „ granted	...	...	...			3	9
„ „ refused	...	...	...			Nil.	4
„ „ in abeyance	...	...				1	2
Pigs applied for	...	...	...	...	...	87	497
„ granted	...	...	...	...	...	62	186
Total number of licensed piggeries...	...	...				31	40
„ pigs	...	...	...	...	...	474	670
Number of visits to piggeries	...	...	...			120	169
„ Informations	...	.	...	..		2	1
„ Fined	...	...	...	...	...	1	1
<hr/>							
Amount of Fines and Costs	...	...	...	£5	4 6	£2	4 6

DAIRIES, COWSHEDS AND MILKSHOPS.

						<u>1900.</u>
Number of applications to keep cows on premises not previously licensed	..	...	...	...		5
„ „ granted	...	...	...	..	...	3
„ „ in abeyance, pending alterations...	...					2
„ cows applied for on above applications	...	...	...			58
„ granted	...	...	...	...	...	31

Number of applications standing over from 1899	...	...	...	13
„ „ now granted	...	...	...	13
„ applications for transfer to fresh tenants of cowsheds previously licensed	...	...	...	50
„ „ now granted	...	...	...	43
„ „ in abeyance, pending alterations...	...	...	...	7
„ applications to keep more cows than the number for which the license was originally granted	...	...	...	10
„ „ granted	...	...	...	10
„ additional cows applied for	...	...	...	24
„ „ granted	...	...	...	20
„ Cowsheds existing within the City during 1899	...	...	...	434
„ „ now existing	...	...	...	437
Number of cows licensed to be kept within the city area	...	...	...	5,905

#### COWSHED INSPECTION.

The Cowsheds have been systematically inspected throughout the year by the Cowshed Inspectors in order to ensure that the Local Acts and Regulations were being carried out.

There is a decided improvement in the manner in which these premises are now kept.

				<u>1899.</u>	<u>1900.</u>
Number of Inspections of Cowsheds	...	...	...	4,166	4,415
„ found Incorrect	...	...	...	210	148
„ Informations	...	...	...	12	9
„ Fined	...	...	...	11	7
Amount of Fines and Costs	...	...	...	£23 19 6	£11 19 0

One hundred and six caution notices have been issued to occupiers of Cowsheds for contravention of the Regulations.



Number of cowsheds in the city during the years 1891 to 1900 inclusive, together with the number of cows licensed to be kept, and the number of applications for new cowsheds, is as follows:—

	Cowsheds.		Cows.		Applications.	
1891	...	380	...	4,950	...	1
1892	...	337	...	4,539	...	6
1893	...	344	...	4,634	...	4
1894	...	304	...	4,005	...	2
1895	...	325	...	4,311	...	20
1896	...	404	...	5,393	...	129
1897	...	453	...	5,650	...	33
1898	...	435	...	5,695	...	13
1899	...	434	...	5,851	...	2
1900	...	437	...	5,905	...	5

#### MILKSHOPS.

Number of Applications for registration	...	...	...	...	140
of which transfers were	.	...	...	...	104
„    above Applications granted	...	...	...	...	129
„    „    „    refused	✓	...	...	..	2
„    „    „    in abeyance	...	...	...	...	9

Sixteen applications standing over from 1899 have been granted.

Number of Milkshops on the register at the end of 1896	..	...	909
„    „    „    „    1897	...	...	988
„    „    „    „    1898	...	...	892
„    „    „    „    1899	...	...	830
„    „    „    „    1900	...	...	869

DAIRIES AND MILKSHOPS INSPECTION.

	<u>1899.</u>	<u>1900.</u>
Number of Inspections of Dairies and Milkshops	6,283	6,368
„ found incorrect ... ..	443	194
„ of Informations ... ..	11	8
„ Fined ... ..	11	8
Amount of Fines and Costs ... ..	£21 14 6	£16 16 0

Fifty-nine caution notices have been issued to occupiers of milkshops for contravention of the Regulations.

LEAVELOOKERS' VISITS TO SHIPPONS FOR THE PURPOSE OF  
EXAMINING COWS.

No. of Visits.	No. of Examinations of Cows.	No. found Healthy.	No. found ill and referred to the Veterinary Inspector.
2,829	34,238	34,200	38

ICE CREAM MAKERS AND VENDORS.

The premises occupied by these persons have been systematically visited, special attention having been directed to those approved premises which are jointly used by street traders in ice cream.

The visits include regular inspection during the day, and also surprise visits at other times.

The dwellings in the occupation of street traders are also kept under close observation to insure that no portion of the process of making ice cream is carried on therein.

There is now a general desire amongst the street traders to utilise premises which are specially adapted for the manufacture of ice cream.

						<u>1899.</u>	<u>1900.</u>
Number of premises under Inspection	...	...	...	...	...	347	459
„ visits made	...	..	...	...	...	1,848	2,375
„ caution notices issued	...	...	...	...	...	23	51
„ Informations	...	...	...	...	...	3	5
„ Fined	...	...	...	...	...	2	5
<hr/>							
Amount of Fines and Costs	...	...	...	...	...	£3 9 0	£8 2 6

## TUBERCULOSIS AND MILK.

One of the dangers of the tuberculous infection of human beings arises from the consumption of raw milk taken from cows which are themselves suffering from tuberculosis ; notably tuberculosis of the udder.

It is obvious that numerous points are involved in the subject, some of which are difficult to dissociate from questions other than those which concern tuberculosis only. For example, measures taken with the sole object of checking an even more destructive form of disease, viz., diarrhœa, have proved incidentally a safeguard against tuberculosis, whilst, on the other hand, measures directed against tuberculosis have afforded a valuable protection from other forms of disease.

Sterilisation of milk possesses one conspicuous advantage, viz., that the application of the safeguard is within the reach of every reasonably prudent and careful household, consequently for ease of application it is beyond any comparison with other preventive measures. The objections to it do not appear to be important, but there are the facts to be reckoned with, that in the lower quarters of every great town there are thousands of families neither prudent nor careful, and also that the population of this country as a rule prefer to take their milk raw. This preference results no doubt partly from thoughtlessness and partly from habit. Young children are trained to take it raw, and the belief is widespread, that if the

milk is raised in temperature to say 200° F., or even still nearer the boiling point, it is altered in flavour and constitution, and is of less nutritive and digestive value than when it is given raw ; the raw milk in fact is regarded as more nearly approaching the natural milk of the mother.

There is no clinical evidence whatever to show that sterilised or even boiled milk is less nutritious and valuable than raw milk. On the other hand, raw cows' milk, in addition to the risk of tuberculosis, brings many others. The process of milking may involve dirt from a dirty milker, from dirty udders into a dirty milk pail. From this it may be passed through a dirty strainer into a dirty railway can. It is discharged from the railway can into smaller vessels in which it is hawked about the dusty streets, passing through some half-dozen other pots and pans before it reaches the nursery or the table of the consumer, involving a host of possible sources of contamination, not excepting the contamination of Tubercle Bacillus, in fact, it may be safely said, there is no article of food in common use so constantly exposed to contamination, or so susceptible of contamination, as raw milk. The milk, on the other hand, as Nature intended it to be given, is never once exposed to air, passing directly and at the time of its manufacture in the gland, to the stomach of the young animal, and, apart from the possibility of disease in the gland, is bacteriologically clean and pure.

Sterilisation, valuable as it is as a final safeguard against tuberculosis, is after all only an expedient, and must not be put into so much prominence that the importance of the safeguard afforded by keeping the cows healthy is lost sight of, although we cannot take it for granted, in considering the merits of different methods, that essential accessories common to them all will be observed. The one merit of sterilisation is that it is an expedient easy of application and presenting few administrative difficulties. Beyond any question the ultimate advantage lies in obtaining the milk from herds free from tuberculosis. It is, in fact, comparable with the advantage of obtaining drinking water from a pure source, instead of taking it from a contaminated one and relying upon purification afterwards. The first aim must be to ensure that the source of the milk is pure ; in other words, that the cows are free from tuberculosis, or if this, under existing conditions of the law and public opinion, is unattainable, that they shall at least be free from any tuberculous disease of the udder, or any tumour or condition of the udder simulating tuberculous disease, or, having regard to difficulties in



diagnosis, we may with advantage go even a step further, and demand that the udder in all cows from which milk is taken for human food shall be in a perfectly normal condition.

The main causes of tuberculosis in cows are notorious : close confinement in ill-ventilated, badly-lighted, ill-constructed and dirty cowsheds—defects all as easy to remedy as is removal from the cowshed of the obviously tuberculous animal before it can cause infection of the rest.

In the city of Liverpool about 26,000 gallons of milk are consumed every day ; one-half of it comes from cows, about 6,000 in number, kept within the city, the other half comes from cows kept in the country, and is sent in by rail. Within recent years that part of the milk supply which comes from cows kept within the city has been practically free from tuberculosis. This has been brought about by the sanitation of the cowsheds, adequacy of air, light, and cleanliness, by systematic and frequent inspection of the cows by qualified inspectors with veterinary help, by frequent bacteriological analysis of the samples of milk : these are the measures which have effected this end. I do not say that out of the 6,000 cows in the city there is not a single one affected with tubercle, but merely that there are few with such form of tuberculous disease as would be likely to contaminate the milk supply.

These methods and this system of inspection were not initiated without difficulty and opposition. There is no opposition now ; every person acquiesces in advantages which have been gained. But there is another aspect to the question. Only one half of the quantity of milk consumed in Liverpool is supplied from the city, the remaining half comes from the country districts, but, it may be said, if the cows kept in the cow sheds within a great and populous city are healthy, those coming from the sunny meadows of the country, with their fertile pastures and ample land, are free also. Unfortunately, experience does not bear this out, the milk sent in from the country is more frequently tuberculous ; thus out of 422 town samples examined during 1899 and 1900, five were tubercular, being a little more than one per cent., but out of 490 country samples taken during the same period, twenty were tubercular, being a trifle over 4 per cent. How can we protect ourselves against this? A special Act of Parliament applying to a few great towns, including Liverpool, gives special powers to exclude from the city, under a penalty, the milk coming from the country cowsheds in which tuberculous cows are kept under dirty and insanitary conditions. But if it is difficult to deal with and supervise the

supply within our own city, it is evidently both costly and difficult to maintain a staff to send, under the Special Act of Parliament, to the insanitary and tubercle-ridden cowsheds of the country cowman; but having overcome these difficulties, the broad national question comes in, for, although we succeed in protecting ourselves, what happens with regard to the diseased cows and the diseased milk? The dealer refrains from sending diseased milk to the protected city, but what is there to prevent him from sending his milk for sale and consumption to a district where no Special Act of Parliament exists to enable the community to protect itself, or from selling his diseased cows to a dairyman in another locality. This is not the way to secure a supply of milk from herds free from tuberculosis, but there can be little doubt that the action of the great cities will not only protect themselves, but will, to a certain extent, protect the country districts also, and will strengthen the hands of rural sanitary authorities. No doubt the great cities are financially better able to protect themselves; they have their larger and more costly staff, they have their bacteriological laboratories, their veterinary and medical officers, but at best they are but valuable allies to the rural sanitary authorities, and these after all, must take their own action, since the protection the cities afford them is an indirect vicarious one, and as in cases already alluded to, there is nothing to prevent the cow-keeper from sending his diseased produce to rural districts, after he has been prohibited from sending it to the great cities. Furthermore, the undoubted decline in the proportion of tuberculous milk sent in from the country may really mean that a larger proportion is consumed elsewhere. The subject is quite important enough for a Government Department, *e.g.*, the Local Government Board to take in hand and appoint a special staff to supervise the milk supply and all appertaining to it throughout the country.

It is quite possible to ensure that the milk supply shall come from cows free from tuberculosis. Difficulties, from ignorance, obstruction and active opposition may be taken for granted, but these must be overcome, and the cow-keeper will learn in time that his own interests are identical with those of his customers, and by keeping healthy cows in a sanitary condition he will be a gainer in every way.

It is only right to emphasise the fact that during the last year the samples of milk taken at the railway stations on arrival from the country did not appear to be more frequently tubercular than the samples taken from the town. This may indicate one of two things; either a general

improvement in the country cowsheds under the stimulus of city action, or as in more cases than one which have come under notice, dairymen who have been detected in sending in tuberculous milk, have refrained altogether from sending milk to Liverpool, and now send their milk elsewhere. These are points not to be lost sight of.

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The Liverpool Corporation Act, 1900, contained, amongst others, the following important clauses, designed to protect consumers of milk from the dangers of tuberculosis :—

17.—In this Part of this Act—

“Dairy” shall include any farm, farmhouse, cowshed, milk store, milk shop, or other place from which milk is supplied, or in which milk is kept for purposes of sale :

“Dairyman” shall include any cowkeeper, purveyor of milk, or occupier of a dairy :

“Medical Officer” means the medical officer of health for the city and includes any person duly authorized to act temporarily as medical officer of health.

18.—Every person who knowingly sells or suffers to be sold or used for human consumption within the city the milk of any cow which is suffering from tuberculosis of the udder, shall be liable to a penalty not exceeding ten pounds.

19.—Any person the milk of the cows in whose dairy is sold or suffered to be sold or used for human consumption within the city, who after becoming aware that any cow in his dairy is suffering from tuberculosis of the udder, keeps or permits to be kept such cow in any field, shed, or other premises along with other cows in milk, shall be liable to a penalty not exceeding five pounds.

20.—Every dairyman who supplies milk within the city, and has in his dairy any cow affected with, or suspected of, or exhibiting signs of tuber-



culosis of the udder, shall forthwith give written notice of the fact to the medical officer, stating his name and address, and the situation of the dairy or premises where the cow is.

Any dairyman failing to give such notice shall be liable to a penalty not exceeding forty shillings.

21.—(1) It shall be lawful for the medical officer or any person provided with and if required, exhibiting the authority in writing of such medical officer, to take within the city for examination samples of milk produced, or sold, or intended for sale within the city.

(2) The like powers in all respects may be exercised outside the city by the medical officer or such authorized person if he shall first have obtained from a justice, having jurisdiction in the place where the sample is to be taken, an order authorizing the taking of samples of the milk which order any such justice is hereby empowered to make.

22.—(1) If milk from a dairy situate within the city is being sold or suffered to be sold or used within the city, the medical officer or any person provided with and if required, exhibiting the authority in writing of the medical officer, may if accompanied by a properly qualified veterinary surgeon, at all reasonable hours, enter the dairy and inspect the cows kept therein; and if the medical officer or such person has reason to suspect that any cow in the dairy is suffering from tuberculosis of the udder he may require the cow to be milked in his presence and may take samples of the milk, and the milk from any particular teat shall, if he so requires, be kept separate and separate samples thereof be furnished.

(2) If the medical officer is of opinion that tuberculosis is caused or is likely to be caused to persons residing in the city from consumption of the milk supplied from a dairy situate within the city or from any cow kept therein he shall report thereon to the Corporation, and his report shall be accompanied by any report furnished to him by the veterinary surgeon,



and the Corporation may thereupon serve on the dairyman notice to appear before them within such time, not less than twenty-four hours, as may be specified in the notice to show cause why an order should not be made requiring him not to supply any milk from such dairy within the city until the order has been withdrawn by the Corporation.

(3) If the medical officer has reason to believe that milk from any dairy situate outside the city from which milk is being sold or suffered to be sold or used within the city is likely to cause tuberculosis in persons residing within the city, the powers conferred by this section may in all respects be exercised in the case of such dairy, provided that the medical officer or other authorised person shall first have obtained from a justice having jurisdiction in the place where the dairy is situate an order authorizing such entry and inspection, which order any such justice is hereby empowered to make.

(4) Every dairyman and the persons in his employment shall render such reasonable assistance to the medical officer or such authorized person or veterinary surgeon as aforesaid as may be required by such medical officer person or veterinary surgeon for all or any of the purposes of this section and any person refusing such assistance or obstructing such medical officer person or veterinary surgeon in carrying out the purposes of this section shall be liable to a penalty not exceeding five pounds.

(5) If in their opinion the dairyman fails to show cause why such an order may not be made as aforesaid the Corporation may make the said order and shall forthwith serve notice of the facts on the county council of any administrative county in which the dairy is situate and on the Local Government Board and if the dairy is situate outside the city on the council of the borough or county district in which it is situate.

(6) The said order shall be forthwith withdrawn on the Corporation or their medical officer being satisfied that the milk supply has been changed or that it is not likely to cause tuberculosis to persons residing in the city.

(7) If any person after any such order has been made supplies any milk within the city in contravention of the order or sells it for consumption therein he shall be liable to a penalty not exceeding five pounds and if the offence continues to a further penalty not exceeding forty shillings for every day during which the offence continues.

(8) A dairyman shall not be liable to an action for breach of contract if the breach be due to an order under this section.

(9) The dairyman may appeal against an order of the Corporation under this section or the refusal of the Corporation to withdraw any such order either to a petty sessional court having jurisdiction within the city or at his option if the dairy is situate outside the city to the Board of Agriculture who shall appoint an officer to hear such appeal. Such officer shall fix a time and place of hearing within the city and give notice thereof to the dairyman and the town clerk not less than forty-eight hours before the hearing. Such officer shall for the purposes of the appeal have all the powers of a petty sessional court.

(10) The Board of Agriculture may at any stage require payment to them by the dairyman of such sum as they deem right to secure the payment of any costs incurred by the Board of Agriculture in the matter of the appeal.

24.—Offences under this Part of this Act may be prosecuted and penalties may be recovered by the Corporation before a petty sessional court having jurisdiction in the place where the dairy is situate or the offence is committed and not otherwise.

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Sections 9 and 11 of the Sale of Food and Drugs Act, 1899, which came into operation on 1st January, 1900, contain the following clauses :—

“ 9. Every person who, himself or by his servant, in any highway or place of public resort sells milk or cream from a vehicle or from a can or other receptacle shall have conspicuously inscribed on the vehicle or receptacle his name and address, and in default shall be liable on summary conviction to a fine not exceeding two pounds.

“ 11. Every tin or other receptacle containing condensed, separated, or skimmed milk must bear a label clearly visible to the purchaser on which the words ‘ Machine-skimmed Milk ’ or ‘ Skimmed Milk,’ as the case may require, are printed in large and legible type, and if any person sells or exposes or offers for sale condensed, separated, or skimmed milk in contravention of this section he shall be liable on summary conviction to a fine not exceeding ten pounds.”

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PROCEEDINGS UNDER THE FOOD AND DRUGS  
AND MARGARINE ACTS.

All samples of food or drugs are taken either by, or under the superintendence of Inspectors of the Health Department. It is of the greatest consequence that trained and practised persons should be employed for this purpose. It is necessary from time to time to employ women or young lads as agents, to go into the shop to ask for the articles, and as soon as the agent receives them, the Inspector enters the shop and completes the formalities which the Act requires. The following is a list of the

SAMPLES TAKEN FOR CHEMICAL ANALYSIS.

No of Samples purchased.	Description of Samples.	Adulterated.	Informations.
1	Almonds (ground) ... ..	...	...
12	Arrowroot ... ..	...	...
20	Baking Powder ... ..	1	1
215	Beer ... ..	42	6
67	Bitter Beer ... ..	10	1
3	Black Currant Wine ... ..	3	1
1	Blackberry Wine ... ..	...	...
1	Black Pudding ... ..	...	...
1	Blanc Mange Powder ... ..	...	...
1	Bon Ox ... ..	...	...
1	Bovril ... ..	...	...
1	Brandy ... ..	...	...
11	Bread ... ..	...	...
1	Browning ... ..	...	...
38	Butter... ..	4	2
2	Cakes ... ..	...	...
3	Camphorated Oil ... ..	...	...

SAMPLES TAKEN FOR CHEMICAL ANALYSIS—CONTINUED.

No. of Samples purchased.	Description of Samples.	Adulterated.	Informations.
1	Capers ... ..	...	...
5	Carbonate of Soda ... ..	...	...
2	Carraway Seeds ... ..	...	...
1	Cherry and Cider ... ..	...	...
38	Cheese... ..	2	...
1	Chewing Gum ... ..	...	...
1	Chlorodyne ... ..	...	...
7	Chlorodyne Lozenges ... ..	...	...
2	Chocolate ... ..	...	...
1	Chutney (Bengal) ... ..	...	...
1	Cinnamon ... ..	...	...
2	Cloves ... ..	...	...
10	Cocoa ... ..	1	1
1	Cocoatina ... ..	...	...
7	Cod Liver Oil ... ..	...	...
47	Coffee ... ..	3	2
3	Coffee and Chicory ... ..	...	...
7	Cornflour ... ..	...	...
27	Cream ... ..	21	7
9	Cream of Tartar ... ..	...	...
1	Custard Powder ... ..	...	...
1	Dandelion Coffee ... ..	...	...
1	Desiccated Cocoanut ... ..	...	...
1	Egg Powder ... ..	1	1
13	Flour ... ..	...	...
9	Flour, Self-raising ... ..	1	1
4	Gin ... ..	...	...
31	Ginger (Ground and Whole) ..	1	...
12	Ginger Wine ... ..	7	3



SAMPLES TAKEN FOR CHEMICAL ANALYSIS—CONTINUED.

No. of Samples purchased.	Description of Samples.	Adulterated.	Informations.
3	Honey...    ...    ...    ...    ...	...	...
3	Ice Cream    ...    ...    ...    ...	...	...
46	Jams    ...    ...    ...    ...	2	1
6	Jellies ...    ...    ...    ...    ...	...	...
29	Lard    ...    ...    ...    ...    ...	...	...
5	Lemon Squash    ...    ...    ...    ...	2	...
1	Lemon Syrup    ...    ...    ...    ...	...	...
4	Lime Juice...    ...    ...    ...    ...	1	...
12	Lime Juice Cordial ...    ...    ...    ...	3	1
1	Liquorice Powder    ...    ...    ...    ...	...	...
1	Mace    ...    ...    ...    ...    ...	...	...
27	Margarine    ...    ...    ...    ...    ...	3	2
1	Margarine Cheese    ...    ...    ...    ...	...	...
13	Marmalade    ...    ...    ...    ...    ...	...	...
4	Medicine Prescriptions    ...    ...    ...    ...	...	...
842	Milk (new)    ...    ...    ...    ...    ...	95	82
45	Milk (skimmed)    ...    ...    ...    ...    ...	5	5
16	Milk (separated)    ...    ...    ...    ...    ...	4	1
21	Milk (condensed)    ...    ...    ...    ...    ...	...	...
15	Mixed Spice    ...    ...    ...    ...    ...	2	2
6	Mustard    ...    ...    ...    ...    ...	...	...
1	Nutmeg (ground)    ...    ...    ...    ...    ...	...	...
3	Oatmeal    ...    ...    ...    ...    ...	...	...
1	Olives ...    ...    ...    ...    ...    ...	...	...
8	Olive Oil    ...    ...    ...    ...    ...	...	...
2	Orange Wine...    ...    ...    ...    ...    ...	1	—
5	Pepper, cayenne    ...    ...    ...    ...    ...	...	...
1	„    black    ...    ...    ...    ...    ...	...	...
47	„    white    ...    ...    ...    ...    ...	5	2

SAMPLES TAKEN FOR CHEMICAL ANALYSIS—CONTINUED.

No of Samples purchased.	Description of Samples.	Adulterated.	Informations.
4	Piccalilli ... ..	...	...
15	Pickles ... ..	...	...
5	Plaster, Bella Donna ... ..	2	1
1	Port Wine ... ..	...	...
6	Potted Shrimps ... ..	6	...
1	Preserved Apricots ... ..	...	...
1	„ Cherries ... ..	...	...
1	„ Damsons ... ..	...	...
1	„ Mixed Fruits ... ..	...	...
1	„ Peaches ... ..	...	...
1	„ Pears ... ..	...	...
7	„ Peas ... ..	6	2
5	„ Pineapple ... ..	...	...
4	„ Tomatoes ... ..	...	...
1	Raspberry Champagne ... ..	...	...
8	Raspberry Wine ... ..	5	2
2	Rice, ground ... ..	...	...
6	Rum ... ..	...	...
2	Salt ... ..	...	...
8	Sausage ... ..	3	...
2	Seidlitz Powder ... ..	1	1
2	Sherry Wine ... ..	...	...
20	Stout ... ..	...	...
21	Sugar ... ..	...	...
26	Sweetmeats ... ..	...	...
6	Syrup ... ..	...	...
17	„ golden ... ..	2	1
1	Tapioca ... ..	...	...
4	Tartaric Acid ... ..	...	...

SAMPLES TAKEN FOR CHEMICAL ANALYSIS—CONTINUED.

No. of Samples purchased.	Description of Samples.	Adulterated,	Informations.
31	Tea ... ..	...	...
6	Vinegar ... ..	...	...
2	Vino ... ..	...	...
5	Whisky, Irish ... ..	...	...
4	„ Scotch ... ..	...	...
2	Yeast ... ..	...	...
Total <u>2025</u>		245 <i>Adulterated.</i>	129
1522	preceding year.	165 preceding year.	110

								<u>1899.</u>	<u>1900.</u>
Number of Informations	...	...	...	...	...	...	...	110	129
„ Fined	...	...	...	...	...	...	...	90	107
Acquitted or Withdrawn	...	...	...	...	...	...	...	20	22
Amount of Fines and Costs								£250 7 0	£375 13 6

DETAILS OF SAMPLES OF MILK OBTAINED FOR CHEMICAL ANALYSIS DURING THE YEAR 1900.

	<u>1899.</u>	<u>1900.</u>
Number of Samples purchased on Week-days in Town..	516	420
„ Informations ... ..	64	60
Number of Samples taken at Railway Stations on Week-days ... ..	127	121
„ Informations ... ..	1	3
Number of Samples purchased on Sundays in Town ...	145	152
„ Informations ... ..	20	23
Number of Samples taken at Railway Stations on Sundays	78	151
„ Informations ... ..	2	1
„ Samples taken at City Hospitals ... ..	...	60
„ Informations ... ..	...	1

The amount of fines for offences under the Sale of Food and Drugs Act has considerably increased during the past twelve months as compared with the preceding twelve months, but the number of samples taken also shows a considerable increase.

ARSENIC IN BEER.

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Towards the latter half of the year there was found to be an increase in the number of persons seeking hospital relief on account of a form of disease usually associated with alcoholic poisoning (peripheral neuritis), but in many of these cases the paralysis was accompanied with more or less marked pigmentation of the skin. During the same period there was also an increase, notably amongst women, in the ordinary cases of alcoholism, and a larger proportion than usual were attended with fatal results. It was coincidentally brought to light from time to time that many of the recipients of money given for the support of the families of Reservists were spending the money in drink. These circumstances furnished the only explanation of the cases of peripheral neuritis, although the explanation was not completely satisfactory.

However, towards the latter part of November a light was suddenly thrown upon these cases by the report of Dr. Reynolds, of Manchester, to the effect that he had found that similar cases coming under his care in the Workhouse Hospital there, were unquestionably cases of arsenical poisoning, due, as he proved, to the presence of arsenic in beer. This discovery of Dr. Reynolds instantly aroused the suspicion of the possibility of arsenic being present in beer in Liverpool. The reports of the City Analyst had never suggested any such thing, and the samples of beer submitted for chemical analysis during October were certified to be genuine. Having regard, however, to the enormous quantities of beer consumed in some districts of the City, it was obvious that if arsenic were present, nothing but the promptest measures could avert a calamity.

The first and obvious step was to determine in the quickest possible way whether or not any of the beer sold in the numerous licensed premises in Liverpool was contaminated, and if so, to at once stop the consumption of the poisoned beer



On November 29th a number of the patients suffering from peripheral neuritis at the Mill Road Infirmary were examined, and a considerable number of samples of beer procured in different parts of the City for purposes of analysis.

The circumstances at that time showed that in Liverpool certain brews of beer were contaminated with arsenic owing, as far as could then be ascertained, to impure sulphuric acid having been supplied to one manufacturer, and used by him in the preparation of glucose. The utmost anxiety was shown by the brewers to withdraw from the market any beer which might be suspected of arsenical contamination, but it was impossible at first, owing to the rush of work thrown on the analysts, to fully locate the mischief.

In cases where the samples were found to be from contaminated sources the whole of the beer upon the premises in question, and which might by any possibility be suspected of contamination, was forthwith run into the sewers, or sealed with the official seal used in taking samples under the Food and Drugs Act, and destroyed as soon as possible.

The various brewing firms, upon the suggestion of the Medical Officer, employed on their own behalf analysts of repute, and every possible effort was made to overtake the mischief resulting from the distribution on the market of the contaminated glucose.

The circumstances attending this widespread arsenical poisoning are wholly without precedent. In dealing with the matter locally, the object aimed at was to remove forthwith the contaminated beer from public consumption. In order to effect this end, it was obviously essential, in the interests of the public safety, to locate the contaminated supply with as little delay as possible. Samples were therefore procured for qualitative examination only, without complying with the formalities of the Sale of Food and Drugs Act, and with the full knowledge that no proceedings could be taken subsequently under that Act. The reasons for taking such a course were to save time, and if that course had not been taken, evidence would not have been available, nor could any prosecution have been taken for several weeks, during which time incalculable mischief might have been done. Moreover, the

numbers of samples which it would have been possible to examine quantitatively could not have been one-fourth as large as those which were dealt with in the time.

When the presence of the mischief was located, it was then deemed advisable to proceed under the Food and Drugs Act, and with this object samples were in due course taken.

The main source of the poisoning was found to be glucose manufactured by Messrs. Bostock from an arsenical sulphuric acid supplied by Messrs. Nicholson, of Leeds.

It is not improbable that minute quantities of arsenic may find their way into beer in the process of manufacture from other sources, and investigations into this are proceeding.

The following table shows the results of the chemical analysis of the samples procured:—

Nature of Sample.	Samples taken.	Certified Genuine.	Certified to contain Arsenic.	Percentage of Contamination.
Beer      ...      ...      ...	215	173	42	19·5%
Bitter Beer      ...      ...	67	57	10	14·9%
Stout      ...      ...      ...	20	20	0	0

#### CONTAMINATED SAMPLES.

The 52 contaminated samples may be classified as under:—

Contaminated to an extent varying from $1\frac{1}{2}$ grains per gallon to $\frac{1}{20}$ grain per gallon	...	...	...	25
Contaminated slightly, some being duplicates	...	...	...	24
Contaminated to the extent of a minute trace	...	...	...	3

The Samples showing the presence of arsenic to the larger extent were all obtained during the first few days.

The number of authenticated cases of arsenical poisoning was about 100, and the number of known fatal cases 3.

It is not unlikely that the actual numbers were somewhat in excess of these figures.

PRESERVATIVES.

The preservation of meat, and other perishable foods, by means of cold is, as is well known, largely resorted to in this country. The successful application of cold as a preservative receives its best illustration in the case of the Copenhagen milk supply, into the details of which it is not now necessary to enter.

In this country the use of chemical preservatives is exceedingly common, and in the case of some very perishable articles, such as milk and cream, it is to be feared, takes the place of care and cleanliness.

It is established beyond dispute that chemical preservatives, whilst checking putrefactive changes in the food, may also check the fermentative processes of digestion.

In prosecutions which have been undertaken in regard to British wines, the defendants have actually had the effrontery to put forward the defence that the chemicals employed were useful as drugs, and they had actually induced medical men to go into the witness-box to prove to the court the value of these drugs when used medicinally, the evidence proving nothing more than that a dose of physic can be administered without injury in certain diseased conditions of the human frame; but the promiscuous administration of doses of physic of this character at meal times is known to have a very prejudicial effect, especially upon young infants.

The addition of formalin, or boracic acid, to milk, still appears to be exceedingly uncommon in Liverpool, the growing tendency to the use of these materials in milk having been checked by a prosecution under the Food and Drugs Act.

It is abundantly plain that there can be no real necessity for the use of these drugs in milk; if it were a real necessity the sale of milk could not go on as it does, without their use. Of all articles in which the use of chemical preservatives is likely to be attended with mischief, milk is the most likely, and it is in this case that the use of preservatives is most indefensible. The experiments of Professor Boyce are sufficient to establish the dangers of the practice, even if they stood alone.



COLOURING MATTERS.

Colouring matters seem to have two distinct uses in foods—in the one case, merely to give an attractive appearance to an article, but without imitating any other article, and in the other case, it is added to increase the resemblance of the article to that which it is intended to simulate.

The dirt, or staleness of goods may be concealed by colouring matters, as, for example, dirty rice, used to make egg powders, coloured with a yellow coal tar dye which takes away the dirty appearance; similarly, stale milk coloured with a slightly yellow dye, gets a richer look. With regard to egg powders, which in reality are merely baking powders, these are coloured yellow and labelled “each packet equivalent to one egg.” Cases have actually come under notice in which the purchaser has believed that the packet did actually contain the equivalent in food of a desiccated egg, possibly the yellow colour completed the delusion.

It does not appear that the Food and Drugs Act, which is essentially framed on commercial lines, discountenances the use of colouring matters and preservatives, unless it can be proved that such ingredients are injurious to health.

Every person adding any colouring matter or preservative whatever, to articles of food, should state on a plain, simple and conspicuous label—

1. The material used.
2. The quantity used.
3. The date at which the material was added.

A form of label for supplying this information might be suggested.

Heat and cold as preservatives are exceedingly common, and many articles are now sold as sterile. An article sold as sterile ought certainly to be sterile; if it is not, it possesses the disadvantage of giving a false sense of security to the purchaser. But the sterility should not be secured by using chemicals.

In procuring samples with a view to obtaining information as to the extent to which any given preservative, colouring matter, or adulterant is used, it is of the utmost importance that persons trained in the procedure of obtaining samples should be employed; they, of course, can make use of the services of agents when necessary, but a case may be



instanced in which a gentleman not conversant with the methods obtained a considerable number of samples, and on causing them to be analysed found all of them to contain the same preservative. Enquiry, however, showed that all these samples had been supplied from one and the same source.

The following special samples were submitted during 1900 for special examination :—

SUMMARY.

Brawn .....	2	Oil .....	1
Calves' Feet Jelly .....	1	Pork .....	5
Chicken Broth .....	1	Pork Pie .....	2
Dripping.....	1	Pudding .....	3
Freeze'em.....	1	Red Currant Jelly .....	1
Kidney Soup .....	1	Rock Phosphorus .....	2
Kruger's Bombs.....	1	Sugar .....	5
Malt .....	1	Treacle.....	1
New Milk.....	1	Vimbos.....	1

MARGARINE ACT.

	<u>1899.</u>	<u>1900.</u>
Number of Visits to Wholesale Dealers in Margarine	—	437
„ Visits to Shops ... ..	5890	6011
„ Samples obtained ... ..	16	2
„ „ Analysed ... ..	—	—
„ Informations ... ..	16	2
„ Fined ... ..	16	2
<hr/>		
Amount of Fines and Costs ...	£27 8s.	£2 15s. 6d.

REFUSING TO SELL SAMPLES FOR ANALYSIS.

	<u>1899.</u>	<u>1900.</u>
Number of Informations ... ..	—	1
„ Fined ... ..	—	1
<hr/>		
Amount of Fine and Costs ...	—	£1 4s. 6d.

## BACTERIOLOGICAL EXAMINATIONS AND ANALYSES.

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The work of the Bacteriologist comprises :—

- (a) Examination of food stuffs of various kinds.
- (b) Regular examination of water supplied to the City.
- (c) Examinations into suspected cases of rabies, anthrax, glanders, &c.
- (d) Examination for diagnostic purposes in suspected cases of diphtheria, typhoid fever, tubercular sputum, &c.
- (e) Special investigations.

Every food-stuff and every sample of water is analysed for the presence of (1) *Bacillus coli* ; (2) *Bacillus enteritidis sporogenes*.

Every sample of milk, cream, butter, margarine and cheese is, in addition, examined for the presence of the *Bacillus tuberculosis* by inoculation.

In every sample of water the number of bacteria present in the cubic centimetre is also noted.

To facilitate these operations special apparatus has been constructed in the laboratory, and many of the operations have been simplified by their use.

With regard to (a) the total number of samples of food-stuffs taken for bacteriological examinations during the year 1900 were as follows :—

1,067 Foods.

101 Samples of Water.

39 Miscellaneous examinations.

In addition a very large number of bacteriological examinations were made of suspected Tubercular, Typhoid, and Diphtheria cases for the medical practitioners of the district.

556 Typhoid and Diphtheria examinations.

The following is a list of the food-stuffs examined:—

SAMPLE.	No.	SAMPLE.	No.
Bloaters (Tinned) . . . . .	1	Oleo . . . . .	1
Bloater Paste . . . . .	9	Orange Butter . . . . .	2
Bovril . . . . .	1	Oysters (Tinned) . . . . .	2
Brawn . . . . .	3	Periwinkles . . . . .	22
Bottled Plums . . . . .	2	Polony . . . . .	3
Boiled Rabbit (Tinned) . . . . .	1	Preserved Tomatoes . . . . .	11
Bottled Gooseberries . . . . .	1	„ Pineapple . . . . .	6
Black Treacle . . . . .	1	„ Peaches . . . . .	1
Butter . . . . .	21	„ Apricots . . . . .	2
Cockles . . . . .	35	„ Peas . . . . .	5
Cream . . . . .	8	Picalilli . . . . .	1
Condensed Milk . . . . .	25	Pineapple Butter . . . . .	1
Cheese . . . . .	13	Pudding . . . . .	1
Crab Paste . . . . .	1	Potted Shrimps . . . . .	3
Chutney . . . . .	4	„ Beef . . . . .	2
Chicken, Ham and Tongue . . . . .	2	„ Lobster . . . . .	2
Chicken and Ham . . . . .	4	Pork, Boiled and Smoked . . . . .	1
Cream Cheese . . . . .	1	Pork Pie . . . . .	3
Dripping . . . . .	4	Potted Tongue (Tinned) . . . . .	2
Extract of Coffee . . . . .	4	„ Beef (Tinned) . . . . .	7
Flour . . . . .	6	„ Ham . . . . .	6
Fresh Herrings . . . . .	1	„ Mixed Game . . . . .	1
Fluid Beef . . . . .	3	Sauces . . . . .	21
Fruit Cream . . . . .	1	Sausage . . . . .	16
Fruit Syrups . . . . .	2	Sago . . . . .	1
Food Jelly . . . . .	1	Sardines (Tinned) . . . . .	20
Golden Syrup . . . . .	1	Sterilised Milks . . . . .	9
Honey . . . . .	4	Salmon (Tinned) . . . . .	13
Herrings and Tomato Sauce . . . . .	1	Sausages (Tinned) . . . . .	1
Infants' Food . . . . .	1	Sweetmeats . . . . .	2
Jams . . . . .	18	Sugar . . . . .	1
Jellies . . . . .	14	Suet . . . . .	1
Lobster (Tinned) . . . . .	4	Tapioca . . . . .	1
Lard . . . . .	6	Turkey and Tongue . . . . .	3
Lemon Curd . . . . .	7	Veal and Ham . . . . .	2
Lemon Cheese . . . . .	1		
Margarine . . . . .	14		1067
Mussels . . . . .	32	Water . . . . .	101
Margarine (Tinned) . . . . .	1	Typhoid and Diphtheria . . . . .	556
Mince Meat . . . . .	2	Miscellaneous examinations . . . . .	39
Milk . . . . .	560		
Oysters . . . . .	65		
Oatmeal . . . . .	5	TOTAL . . . . .	1763

## MILK ANALYSES FOR THE YEAR.

The total number of milks examined was 560. These were examined for the presence of

1. The *Bacillus tuberculosis*.
2. The *Bacillus coli*.
3. The *Bacillus enteritidis sporogenes*.
4. Other bacteria.

The *Bacillus tuberculosis* indicates that the animal from which the milk was taken was tubercular, or that the pails into which the milk was received, or the hands of the milker were infected from previous contact with a diseased cow.

The *Bacillus coli* indicates contamination with dirt, of an intestinal origin, or possibly that the cow was suffering from inflammation of the udder.

The *Bacillus enteritidis sporogenes* indicates dust or intestinal contamination.

### Presence of the Tubercular Bacillus.

Of the 560 samples examined for tubercle 105 guinea pigs died before the tubercular test was completed, leaving 455 samples for the completion of the investigation. *Of this number 9 proved tubercular*, 5 were found in *railway borne milks*, and 4 in *town milks*.

The greater frequency of tubercle in railway borne milks was also noted last year. It is a very serious matter that tubercle is still so widespread in milk. When it is remembered that one tubercular cow may be the means of infecting the milking utensils, the hands of the milker, and even the teats of the other healthy animals, regulations to deal with infected animals cannot be too stringent.



Presence of the *Bacillus Enteritidis Sporogenes* and the  
*Bacillus Coli*.

The *Bacillus enteritidis sporogenes* was found 26 times in 255 town samples of milk, and 42 times in 305 railway borne samples.

The *Bacillus coli* was present 15 times in the town milks, and 40 times in the railway milks.

This is an exceedingly interesting and important result, for it shows that less care is taken in handling the country milk, and therefore that contamination much more frequently occurs. *Bacillus enteritidis sporogenes* appears most common in March and April; *Bacillus coli* in November and December.

In the case of the railway borne milk, the *Bacillus coli* was most abundant in December, and this may indicate that in addition to dirt contamination, a possible other source of the coli was inflammation of the udder.

With regard to the relationship of the *Bacillus coli* to the *Bacillus enteritidis sporogenes*, it has been found that very frequently the two organisms do not occur together. The significance of this is important as throwing light upon the significance of the *Bacillus enteritidis sporogenes* as an index of pollution. Where the *Bacillus coli* and *Bacillus enteritidis sporogenes* occur together this would be strong evidence that the *Bacillus enteritidis sporogenes* was of recent intestinal origin. But in a very large number of cases the *Bacillus enteritidis sporogenes* occur alone. In these cases it is very hard to say what importance is to be attached to its presence, and unless an inoculation test of the virulence of the *Bacillus* is made, it would be impossible to say whether the *Bacillus* is *enteritidis sporogenes* or *butyricus*.

When dealing with a very large number of food stuffs it very greatly increases the work if the pathogenicity of the *Bacillus* which is isolated has to be tested each time.

Table showing the frequency with which the *Bacillus coli* and *Bacillus enteritidis sporogenes* occur alone and together in 560 samples of milk analysed.

Date.	No. of Samples.	<i>Bacillus coli</i> alone.	<i>Bacillus enteritidis</i> alone.	Together.
Jan.	45	5	1	—
Feb.	45	1	3	1
Mar.	55	2	11	3
April	41	3	13	3
May	50	4	9	3
June	48	—	3	2
July	44	1	6	—
Aug.	45	1	5	—
Sept.	44	—	4	—
Oct.	57	4	2	2
Nov.	40	11	2	—
Dec.	46	15	—	—

TABLE SHOWING THE TOTAL NUMBER OF MILKS WHICH WERE EXAMINED DURING 1900  
FOR TUBERCLE, BACILLUS COLI COMMUNIS AND BACILLUS  
ENTERITIDIS SPOROGENES.

Month.	Town	Bac. Coli Com.	Bac. Ent. Spor.	Rail.	Bac. Coli Com.	Bac. Ent. Spor.	Hos- pital.	Bac. Coli Com.	Bac. Ent. Spor.	Total No.	Number of Tubercular Milks.
January ...	21	3	—	20	2	—	4	—	—	45	1 Town.
February...	21	—	1	20	2	3	4	—	—	45	—
March ...	28	3	7	20	2	6	7	—	1	55	1 Railway.
April ...	17	1	8	19	3	8	5	2	—	41	1 Town.
May ...	20	5	4	26	2	8	4	—	—	50	1 Town.
June ...	24	—	—	18	2	5	6	—	—	48	1 Town.
July ...	20	1	1	20	—	4	4	—	1	44	—
August ...	20	—	2	20	1	1	5	—	2	45	2 Railway.
September	22	—	2	16	—	2	6	—	—	44	—
October ..	31	—	—	21	6	4	5	1	—	57	2 Railway.
November	10	2	1	25	7	1	5	2	—	40	—
December	21	—	—	20	13	—	5	2	—	46	—

TABLE SHOWING THE TOTAL NUMBER OF MILKS EXAMINED BACTERIOLOGICALLY  
FOR TUBERCLE BACILLI FROM AUGUST, 1896 TO 31st DECEMBER, 1900.

Year.	Total number of Samples taken.	Town Samples.			Country Samples.		
		Number taken.	Tubercular.	Percentage Tubercular.	Number taken.	Tubercular.	Percentage Tubercular.
1896	119	83	4	4·8%	36	5	14·0%
1897	150	63	4	6·3%	87	5	5·0%
1898	112	84	7	8·3%	28	5	17·9%
	381	230	15	6·5%	151	15	10·0%
1899	352	167	1	0·6%	185	15	8·1%
1900	560	255	4	1·5%	305	5	1·6%
	912	422	5		490	20	
Totals .....	1293	652	20	3·0%	641	35	5·3%



## RESULTS OF ANALYSES OF BUTTER, CREAM, STERILISED MILKS, CONDENSED MILKS, CHEESE, LARD AND MARGARINE.

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**Butter.**—Twenty-one samples were analysed and the *tubercle bacillus* found in one case. If tubercle is present in milk, it can also be present in butter, cream, and margarine, and therefore the finding it in these food-stuffs is a further reason for increasing the vigilance of dairy supervision.

**Creams.**—Eight samples of cream were examined and the *Bacillus coli* found twice and the *Bacillus enteritidis sporogenes* once.

**Sterilised Milks.**—Of the nine samples examined one was found not to be sterile. The sterilisation of milk is difficult on account of the presence of spore-bearing bacilli, the resistance of which to heat is very considerable.

**Condensed Milks.**—Twenty-five samples were examined and the great majority were not sterile. There is no doubt that condensed milk is a most unsatisfactory product. Bacteria are usually present, and the milk, which was originally condensed, might have contained various products of the decomposition of bacteria. These products are masked subsequently by the large quantity of sugar present, but their irritant properties are not destroyed.

**Cheese.**—Thirteen samples were examined. In one case the *Bacillus coli* was present, and in another sample the *Bacillus enteritidis sporogenes*. The probability is that in cheese organisms like the *Bacillus coli* and *bacillus tuberculosis*, which might have been originally present in the milk from which the cheese was made, tend to die out in the process of fermentation.

**Lard and Margarine.**—Twenty-one samples were examined. No tubercle was found, and the *Bacillus enteritidis* in only one sample of Margarine.

**Bacteria present in Shell Fish.**—Some kinds of shell fish, like milk and milk products, are for the most part eaten uncooked; they are in consequence liable to convey infection if they become contaminated with

pathogenic bacteria. Contamination may occur in the transit and storing of the shellfish, but more especially in the collecting grounds. It is not uncommon to find that sewage has access to oyster, mussel and cockle beds. 154 samples were examined for evidence of the *Bacillus coli* and *Bacillus enteritidis sporogenes*. The *Bacillus coli* was present 17 times, the *Bacillus enteritidis* 37 times. The *Bacillus coli* was more frequently present in oysters and mussels, the *Bacillus enteritidis* in periwinkles and cockles. Thus again, as in the case of the milks, there is little uniformity between the occurrence of these two bacilli. It is fortunate that *Bacillus coli* is not more abundant in shellfish in Liverpool, but no efforts must be spared to make the collecting grounds above suspicion of sewage contamination. In the case of cockles and mussels, this is difficult, as they are often taken from the mouths of estuaries where pollution unfortunately occurs to a great extent owing to the discharge of crude sewage.

#### SHELL FISH.

— *Signifies Absent.*

+ *Signifies Present.*

No.	Date.	Name.	Bacillus Coli Comm.	Bacillus Enteritidis Sporogenes.
950	... January 4th	... Oysters	—	—
951	... January 4th	... Cockles	—	—
952	... January 4th	... Mussels	—	—
967	... January 11th	... Mussels	—	—
968	... January 11th	... Mussels	—	—
969	... January 11th	... Oysters	—	—
984	... January 19th	... Mussels	—	—
985	... January 19th	... Oysters	—	—
986	... January 19th	... Cockles	—	—
1016	... February 2nd	... Mussels	—	+
1017	... February 2nd	... Cockles	—	+
1018	... February 2nd	... Oysters	—	—
1036	... February 15th	... Cockles	—	+
1037	... February 15th	... Cockles	—	+
1038	... February 15th	... Cockles	—	—
1039	... February 15th	... Mussels	—	—
1040	... February 15th	... Mussels	—	—
1041	... February 15th	... Mussels	—	—
1042	... February 15th	... Oysters	—	—
1043	... February 15th	... Oysters	—	—
1044	... February 15th	... Oysters	—	—
1081	... March 1st...	... Cockles	—	—
1082	... March 1st...	... Cockles	—	+
1083	... March 1st...	... Cockles	—	—

SHELL FISH.—*Continued.*

No.	Date.			Name.			Bacillus Coli Comm.	Bacillus Enteritidis Sporogenes.
1084	...	March	1st...	...	Mussels	...	—	—
1085	...	March	1st...	...	Mussels	...	+	—
1086	...	March	1st...	...	Mussels	...	—	—
1094	...	March	1st...	...	Oysters	...	—	—
1095	...	March	1st...	...	Oysters	...	—	—
1096	...	March	1st...	...	Oysters	...	—	—
1131	...	March	16th	...	Mussels	...	—	—
1132	...	March	16th	...	Mussels	...	—	—
1133	...	March	16th	...	Mussels	...	—	—
1134	...	March	16th	...	Cockles	...	—	—
1135	...	March	16th	...	Cockles	...	—	—
1136	...	March	16th	...	Cockles	...	—	—
1137	...	March	16th	...	Oysters	...	—	—
1138	...	March	16th	...	Oysters	...	—	—
1139	...	March	16th	...	Oysters	...	—	—
1192	...	April	6th	...	Mussels	...	—	—
1193	...	April	6th	...	Mussels	...	—	—
1194	...	April	6th	...	Mussels	...	—	—
1195	...	April	6th	...	Mussels	...	—	—
1196	...	April	6th	...	Cockles	...	—	—
1197	...	April	6th	...	Cockles	...	—	—
1198	...	April	6th	...	Cockles	...	—	—
1199	...	April	6th	...	Cockles	...	—	—
1200	...	April	6th	...	Oysters	...	—	—
1201	...	April	6th	...	Oysters	...	—	—
1202	...	April	6th	...	Oysters	...	—	—
1203	...	April	19th	...	Oysters	...	—	+
1232	...	April	19th	...	Periwinkles	...	—	+
1233	...	April	19th	...	Periwinkles	...	—	+
1234	...	April	19th	...	Periwinkles	...	—	+
1235	...	April	19th	...	Periwinkles	...	—	+
1236	...	April	19th	...	Oysters	...	—	—
1237	...	April	19th	...	Oysters	...	—	—
1238	...	April	19th	...	Oysters	...	—	—
1239	...	April	19th	...	Oysters	...	—	—
1240	...	April	19th	...	Mussels	...	—	—
1241	...	April	19th	...	Mussels	...	—	+
1242	...	April	19th	...	Mussels	...	+	+
1243	...	April	19th	...	Mussels	...	—	+
1266	...	May	3rd	...	Oysters	...	—	—
1267	...	May	3rd	...	Oysters	...	—	—
1268	...	May	3rd	...	Oysters	...	—	—
1269	...	May	3rd	...	Oysters	...	—	—

SHELL FISH.—*Continued.*

No.	Date.			Name.	Bacillus Coli Comm.	Bacillus Enteritidis Sporogenes.
1270	...	May 3rd	...	Periwinkles	—	—
1271	...	May 3rd	...	Periwinkles	—	—
1272	...	May 3rd	...	Periwinkles	—	+
1273	...	May 3rd	...	Periwinkles	—	—
1274	...	May 3rd	...	Cockles	—	+
1275	...	May 3rd	...	Cockles	—	+
1276	...	May 3rd	...	Cockles	—	—
1277	...	May 3rd	...	Cockles	—	—
1405	...	June 14th	...	Periwinkles	—	+
1406	...	June 14th	...	Periwinkles	—	+
1407	...	June 14th	...	Periwinkles	—	+
1408	...	June 14th	...	Periwinkles	—	+
1409	...	June 14th	...	Periwinkles	—	+
1529	...	Aug. 2nd	...	Cockles	—	—
1530	...	Aug. 2nd	...	Cockles	—	+
1531	...	Aug. 2nd	...	Cockles	—	+
1532	...	Aug. 2nd	...	Cockles	—	+
1533	...	Aug. 2nd	...	Cockles	—	+
1559	...	Aug. 10th	...	Oysters	—	+
1560	...	Aug. 10th	...	Oysters	—	—
1561	...	Aug. 10th	...	Oysters	—	—
1562	...	Aug. 10th	...	Oysters	+	—
1563	...	Aug. 10th	...	Oysters	+	+
1669	...	Sept. 18th	...	Mussels	—	—
1670	...	Sept. 18th	...	Mussels	—	—
1671	...	Sept. 18th	...	Mussels	—	—
1673	...	September 18th	...	Cockles	—	—
1674	...	September 18th	...	Cockles	—	—
1675	...	September 18th	...	Cockles	—	—
1705	...	September 27th	...	Oysters	—	—
1706	...	September 27th	...	Oysters	—	—
1707	...	September 27th	...	Oysters	—	—
1708	...	September 28th	...	Periwinkles	—	—
1709	...	September 28th	...	Periwinkles	—	—
1710	...	September 28th	...	Periwinkles	—	—
1757	...	October 15th	...	Oysters	—	—
1758	...	October 15th	...	Oysters	—	—
1759	...	October 15th	...	Oysters	—	—
1760	...	October 15th	...	Oysters	—	—
1761	...	October 15th	...	Oysters	—	—
1783	...	October 26th	...	Periwinkles	—	+
1784	...	October 26th	...	Periwinkles	—	+
1785	...	October 26th	...	Periwinkles	—	+



**SHELL FISH.**—*Continued.*

No.	Date.	Name.	Bacillus Coli Comm.	Bacillus Enteritidis Sporogenes.
1800	... October 26th	... Periwinkles ...	+	+
1825	... November 6th	... Oysters ...	+	+
1826	... November 6th	... Oysters ...	+	+
1827	... November 6th	... Oysters ...	+	—
1828	... November 6th	... Oysters ...	—	—
1829	... November 6th	... Oysters ...	—	—
1830	... November 6th	... Oysters ...	—	—
1831	... November 6th	... Oysters ...	—	—
1832	... November 6th	... Oysters ...	—	—
1833	... November 6th	... Oysters ...	—	—
1834	... November 6th	... Oysters ...	+	—
1835	... November 6th	... Oysters ...	—	—
1846	... November 10th	... Periwinkles ...	+	—
1847	... November 10th	... Periwinkles ...	—	—
1848	... November 13th	... Oysters ...	—	—
1849	... November 13th	... Oysters ...	—	—
1850	... November 13th	... Oysters ...	—	—
1864	... November 16th	... Mussels ...	+	—
1865	... November 16th	... Mussels ...	+	+
1866	... November 16th	... Mussels ...	+	+
1867	... November 16th	... Cockles ...	—	+
1868	... November 16th	... Cockles ...	+	+
1869	... November 16th	... Cockles ...	—	—
1884	... November 21st	... Mussels ...	+	—
1885	... November 21st	... Mussels ...	+	—
1890	... November 28th	... Oysters ...	—	—
1891	... November 28th	... Oysters ...	—	—
1892	... November 28th	... Oysters ...	—	—
1893	... November 28th	... Oysters ...	—	—
1894	... November 28th	... Oysters ...	—	—
1895	... November 28th	... Oysters ...	—	—
1896	... November 28th	... Oysters ...	—	—
1897	... November 28th	... Oysters ...	—	—
1940	... November 13th	... Cockles ...	—	—

**SHELL FISH.**—*Continued.*

No.	Date.	Name.	Bacillus Coli Comm.	Bacillus Enteritidis Sporogenes.
1941 ...	November 13th ...	Cockles ...	—	—
1942 ...	November 13th ...	Cockles ...	—	—
1943 ...	November 13th ...	Mussels ...	—	—
1944 ...	November 13th ...	Mussels ...	—	—
1945 ...	November 13th ...	Mussels ...	—	—
1988 ...	November 21st ...	Oysters ...	—	—
1989 ...	November 21st ...	Oysters ...	—	—
1990 ...	November 21st ...	Oysters ...	+	—
1991 ...	November 21st ...	Oysters ...	—	—
1992 ...	November 21st ...	Oysters ...	—	—

**Sausages.**—As in the case of sterilised milk, condensed milk, and raw foods generally so in the case of sausages, it is all important that the ingredients should be pure, otherwise the spice simply masks the bacterial changes, and does not destroy the ptomaines or indeed injurious bacteria. 17 samples were examined and the *Bacillus coli* obtained in six samples and the *Bacillus enteritidis sporogenes* in 14 samples.

**Tinned Meats, Fruits and Vegetables.**—Ninety-four samples were examined and in no case was either the *Bacillus coli* or *Bacillus enteritidis sporogenes* found. A few samples were not sterile.

**Pastes and Potted Meats.**—In only one case out of eleven samples was the *Bacillus enteritidis sporogenes* found. Nine out of eleven were not sterile.

**Cereals.**—Considerable interest attaches to the bacterial examination of these articles, because they are very liable to dust contamination. Thirteen samples were examined, of which four showed evidence of the *Bacillus enteritidis sporogenes*. No *coli* was found.

**Jams.**—Jams have shown a freedom from dangerous or danger indicating bacteria. Many are sterile. Those which are not sterile only contain a few bacteria. There is no doubt that the greatest care must be used in the boiling and subsequent distribution of the jam into the pots to ensure sterility and keeping properties.

The following is a summary of the chief investigations and analyses, together with references to the methods employed:—

### 1.—The injurious effects of foods and beverages preserved with Boracic and Salicylic Acids.

To test the injurious action of these preservatives kittens, three weeks old, were fed with milk containing these preservatives in the proportion in which they were found in articles of diet. It will be seen from the table that the kittens fed on boracised milk from May 25th to June 2nd failed not only to gain weight, but actually lost considerably in many cases. The control kittens, on the other hand, fattened in the usual manner. Further the boracised kittens suffered in health, and were subject to diarrhoea. On June 8th a pure milk diet was substituted for the boracised milk, and the kittens rapidly gained in weight. These experiments confirm those which had been made in the previous year.

Further experiments made by Dr. Grünbaum in this Laboratory have shown that the addition of borax to milk to the extent of 0·4 per cent. by precipitating the calcium is sufficient to inhibit the action of the rennet ferment, whilst at the same time the inhibiting effect on the growth of micro-organisms is practically *nil*. On the other hand, keeping milk cooled to 40 deg. F. almost entirely stops the growth of the bacteria.

Both the feeding and digesting experiments show that boracic acid in milk is injurious, and ought not to be added.

## BORACIC ACID EXPERIMENTS.

KITTENS FED WITH BORACISED MILK CONTAINING ABOUT 82 GRAINS TO THE PINT.			CONTROL KITTENS FED WITH PURE MILK.		
Date 1900.	Kitten.	Weighed.	Date 1900.	Kitten.	Weighed.
May 26th.....	No. 1	822 grms.	May 26th.....	No. 1	550 grms.
" .....	" 2	602 "	" .....	" 2	595 "
" .....	" 3	715 "	" .....	" 3	710 "
" .....	" 4	765 "	" .....	" 4	530 "
" .....	" 5	620 "	" .....	" 5	570 "
May 30th.....	No. 1	715 grms.	May 30th.....	No. 1	624 grms.
" .....	" 2	602 "	" .....	" 2	616 "
" .....	" 3	702 "	" .....	" 3	818 "
" .....	" 4	751 "	" .....	" 4	624 "
" .....	" 5	540 "	" .....	" 5	632 "
June 2nd.....	No. 1	777 grms.	June 2nd.....	No. 1	670 grms.
" .....	" 2	580 "	" .....	" 2	648 "
" .....	" 3	717 "	" .....	" 3	850 "
" .....	" 4	755 "	" .....	" 4	680 "
" .....	" 5	500 "	" .....	" 5	643 "

On June 8th, the Kittens which had been fed with Boracised Milk were changed to a diet of Pure Milk.

Date. 1900.	Kitten.	Weighed.	Date 1900.	Kitten.	Weighed.
June 8th.....	No. 1	880 grms.	June 8th.....	No. 1	678 grms.
" .....	" 2	720 "	" .....	" 2	665 "
" .....	" 3	840 "	" .....	" 3	890 "
" .....	" 4	832 "	" .....	" 4	700 "
" .....	" 5	510 "	" .....	" 5	590 "
June 15th.....	No. 1	800 grms.	June 15th.....	No. 1	590 grms.
" .....	" 2	860 "	" .....	" 2	615 "
" .....	" 3	895 "	" .....	" 3	1,000 "
" .....	" 4	800 "	" .....	" 4	737 "
" .....	" 5	505 "	" .....	" 5	636 "
June 22nd .....	No. 1	Missing.	June 22nd.....	No. 1	682 grms.
" .....	" 2	1,050 grms.	" .....	" 2	695 "
" .....	" 3	1,080 "	" .....	" 3	1,010 "
" .....	" 4	790 "	" .....	" 4	980 "
" .....	" 5	600 "	" .....	" 5	690 "



In the case of the salicylic acid experiments, one kitten fed on salicylised milk increased in weight from October 23rd, when the experiments were commenced, till December 4th, when the experiments ended. A second kitten decreased in weight, and died on November 16th. The third kitten at first increased in weight, and then began to lose, and died on November 27th. Of the control kittens, the first and second increased in weight from the commencement to the end of the experiments; the third died too soon after the commencement of the observations for any deductions to be made. These experiments show that salicylic acid has an injurious effect, though less marked than boracic acid, but further research is necessary.

The injurious effects of formalin were fully dealt with in last year's Annual Report.

## 2.—Experiments and observations upon the significance of the *Bacillus Enteritidis Sporogenes*.

Like the *Bacillus coli*, this organism is systematically looked for in waters and food-stuffs. Dr. Klein has laid considerable stress upon its presence, as he considers that it is capable of causing diarrhoea much in the same way as the *Bacillus coli*. During the year much evidence has been accumulated to show its distribution in food-stuffs, and special investigations have been made to determine its significance. Attention was especially drawn to this organism by a case of poisoning which was thought might be due to eating diseased salted fish. Examination of the dried fish showed the presence, amongst other bacteria, of the *Bacillus enteritidis sporogenes*. Subsequent examinations of numerous samples of dried fish, however, showed that this organism was normally present. A series of analyses of foods liable to dust contamination was then made, viz., wheat, barley, oats, oatmeal, flour, rice, cornflour, clovers, grasses, &c. Sixty samples were examined, and forty-one gave an enteritidis-like growth in milk, and thirty were fatal to guinea pigs when inoculated, and eleven produced an inflammatory reaction.

Further research demonstrated that the bacillus was widespread. The pathogenicity of the bacillus isolated was tested, in order to make certain that the bacillus isolated was that described by Dr. Klein.

The observations of the year's analyses show that the organism is abundant in milk and other food-stuffs, and our conclusions are that the *Bacillus enteritidis sporogenes* is much more widespread than the *Bacillus*

coli, owing no doubt to its power of spore formation, and that therefore although originally derived from the intestine, its presence in a food is not of the same significance as that of the *Bacillus coli*. With regard to its pathogenicity in animals, there is no doubt, but in man it is like the *Bacillus coli*, common to the intestine. It may be that certain forms of diarrhœa are due to an increased virulence of this organism in the intestine as in the case of diarrhœa associated with *Bacillus coli*, but further evidence of this is wanted.

### 3.—Experiment to demonstrate the significance of the *Bacillus Coli*.

This organism is looked for in all samples of food-stuffs and water where bacteria are known or suspected to be present. The reason for this is that it is considered by many to be evidence of sewage contamination. In all the analyses it is therefore stated whether it is present or absent, and the result is that during the past twelve months a mass of evidence shows that the *Bacillus coli* indicates recent pollution or contact with inflammatory discharges.

Stream and rivulets, not obviously polluted, showed an absence of this organism in the quantities analysed. Sewage and sewage effluents, on the other hand, or streams near human habitations, showed the presence of the *Bacillus coli*. It has a very low degree of resistance, and soon perishes outside the alimentary tract. This was strikingly demonstrated in the roadways. If the season was dry and the roads dusty, the *Bacillus coli* was absent or very scanty in the dust. On the other hand, in the gutters along the side of the roads, which are usually moist and often receive garbage, the *Bacillus coli* were very numerous. Although the *Bacillus coli* is normally found in the intestine of man and animals, and therefore cannot be said to be under these circumstances harmful, nevertheless cases do occur in which marked diarrhœa is found associated with great development of this organism in the intestine. Such cases of diarrhœa often occur in epidemic form, and the evidence is that under certain circumstances the *Bacillus coli* may become pathogenic, and produce inflammation in the alimentary tract.

**Distribution of Tuberculosis.**—Dr. Elliott conducted an interesting enquiry into the distribution of tuberculosis in Liverpool and the infectivity of houses in which patients have recently died. He examined the dust in four out of ten houses in which deaths had occurred 7 to 14



days previously, and found, by inoculation in the guinea pig, that the tubercle bacillus was present in one of them. In this infected house there had been carelessness in the disposal of the sputa, and cleanliness had not been observed during and after the patient's death. This is a very important observation, for it shows the danger of the consumptive's room not only during his illness but for some considerable time afterwards, and it also shows the value of the disinfection and cleansing carried out by the disinfecting staff when cases of phthisis are notified.

**Plague Investigations.**—During the year numerous rats and several suspected cases of Plague were examined by Dr. Balfour Stewart for the presence of the Plague bacillus, but none was found. To be ready in case of any emergency a stock of vaccine was prepared and kept in the Laboratory, and although no occasion arose in Liverpool for its use, it was supplied to other towns in England where cases had occurred. A large demand also arose for it owing to the outbreak in South Africa, and the total quantity supplied to Municipalities, private individuals, the Colonial and War Offices amounts to 70,000 doses. At the present time a very large quantity is available for immediate use in case of any emergency. *Nature of the vaccine.*—The vaccine is prepared after Haffkine's method, and consists of a sterilised broth cultivation of the virulent plague bacillus. It is put up in sterilised bottles containing a definite number of doses, and is most carefully sealed.

**Investigation of "Pink Eye" in Horses.**—A severe epidemic of this disease broke out during the year amongst the horses of the Corporation and in private stables.

Having failed to obtain evidence of an organism in the horses, numerous examinations were made of the discharges from the eyes and nose, and of all the organs of horses which were slaughtered whilst suffering from the disease. The organs were examined immediately after death, and included the nasal cavity, trachea conjunctiva, liver, spleen, kidneys, subcutaneous tissues and heart. From the mucous membranes a characteristic bipolar bacillus was isolated in large numbers in every case. The Bacillus was pathogenic to guinea pigs, producing fatal results or extensive œdema. It also produced when inoculated into the healthy horse a reaction marked by rapid rise of temperature and very extensive œdema. This Bacillus was common to all the cases of Pink Eye; it was very abundant not only in the discharges but far back in the nasal cavity when the head of

the horse was opened immediately after death, and it was pathogenic. From its cultural properties it appears to be a member of the *Bacillus coli* group. Without further observations it would be impossible to state whether this virulent coli form was the cause of the disease. The inquiry will be continued if another outbreak arises.

#### RABIES.

Twenty dogs were examined for rabies, but fortunately in no case was rabies shown to be present.

Date.					Result of Inoculation.
January	27th	...	...	...	Not Rabies.
February	28th	...	...	...	do.
March	8th	...	...	...	do.
March	9th	...	...	...	do.
March	10th	...	...	...	do.
April	7th	..	...	.	do.
April	9th	...	...	...	do.
April	20th	...	..	...	do.
June	5th	...	...	...	do.
June	11th	...	...	...	do.
June	21st	...	...	...	do.
July	5th	...	...	...	do.
July	5th	...	...	...	do.
July	15th	...	...	...	do.
July	24th	...	...	...	do.
July	31st	...	...	...	do.
Sept.	13th	...	...	...	Rabbit died Sept. 21st.
Sept.	21st	...	...	...	Not Rabies.
October	2nd	...	...	...	do.
November	6th	...	...	...	Inoculation unsuccessful.

#### BACTERIOLOGICAL ANALYSES OF CASES OF TYPHOID AND DIPHTHERIA IN THE CITY FEVER HOSPITALS.

During the year the Fever Hospitals have availed themselves of the facilities of the Municipal Bacteriological Department, and 551 specimens have been examined.



The following is a summary of the results:—336 cases of Diphtheria, 215 Typhoid, 4 Malaria, and 1 Tuberculosis.

Of 336 cases of Diphtheria—

158	were positive.
141	„ negative.
23	„ no growth.
14	„ suspicious.
<hr/>	
336	Total.
<hr/>	

Of 215 cases of Typhoid—

124	gave a positive reaction.
79	„ negative reaction.
7	suspicious.
5	were not examined for various reasons.
<hr/>	
215	Total.
<hr/>	

No *plasmodium Malariae* in any of the Malaria specimens.

No *tubercle bacilli* were found in the specimen of Sputum.

#### WATER ANALYSES.

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All the samples of water have been systematically examined for the presence of the *Bacillus Coli*, and the *Bacillus enteritidis sporogenes* as well as for the total number of bacteria. The quantity of water used for each analysis has been 1 cubic centimetre.

The following are the sources which have been examined:—

*Fortnightly Examinations—*

Ashton Hall Tap.

*Monthly Examinations—*

PRESCOT— { Lake Vyrnwy Water.  
Rivington Water.  
The Mixed Water.

WELLS— { Green Lane Well.  
Windsor Well.  
Dudlow Lane Well.

The results show that the *Bacillus Coli* has not been found present in any sample to the 1 cubic centimetre used.

The average number of Bacteria present in :—

1.—Ashton Hall Water...	...	...	...	= 19· 9 %
2.—Vyrnwy Aqueduct ...	...	...	...	= 19· 6 %
3.—Rivington Aqueduct	...	...	...	= 12·16 %
4.— Green Lane Wells ...	...	...	...	= 81· 0 %
5.—Windsor Well	...	...	...	= 52· 0 %
6.—Dudlow Lane Well...	...	...	...	= 63· 9 %

#### ASHTON HALL—Fortnightly Samples.

Source.	Date, 1900.	Time of Collecting.	Time of Investment.	No. of Bacteria.	B. Coli Comm.	B. Ent. Sporog.
Ashton Hall	Jan. 10th	10 30 a.m.	10 37 a.m.	39	Absent.	Absent.
„	Jan. 23rd	2 20 p.m.	3 0 p.m.	16	„	„
„	Feb. 9th	2 5 p.m.	4 30 p.m.	19	„	„
„	Feb. 20th	2 15 p.m. 21st	10 30 a.m.	25	„	„
„	Mar. 10th	9 30 a.m.	11 40 p.m.	6	„	„
„	Mar. 28th	3 30 p.m.	5 0 p.m.	large No.	„	„
„	April 17th	10 30 a.m.	11 0 p.m.	10	„	„
„	April 25th	10 38 a.m.	11 40 a.m.	13	„	„
„	May 11th	3 30 p.m.	5 0 p.m.	6	„	„
„	May 25th	2 0 p.m.	3 0 p.m.	20	„	„
„	June 8th	3 0 p.m.	4 0 p.m.	3	„	„
„	June 21st	3 7 p.m.	4 0 p.m.	41	„	„
„	July 5th	3 0 p.m.	3 30 p.m.	29	„	„
„	July 20th	10 20 a.m.	11 30 p.m.	12	„	„
„	Aug. 4th	9 40 a.m.	11 0 a.m.	30	„	„
„	Aug. 11th	11 0 a.m.	12 15 p.m.	22	„	„
„	Sept. 12th	11 10 a.m.	11 30 a.m.	5	„	„
„	Oct. 1st	10 30 a.m.	11 0 a.m.	23	„	„
„	Oct. 9th	10 30 a.m.	4 30 p.m.	10	„	„
„	Oct. 28th	10 30 a.m.	11 0 a.m.	16	„	„
„	Nov. 5th	10 30 a.m.	11 30 a.m.	73	„	„
„	Nov. 24th	11 0 a.m.	11 40 a.m.	13	„	„
„	Dec. 7th	4 10 p.m.	5 0 p.m.	9	„	„
„	Dec. 29th	10 40 a.m.	11 30 a.m.	18	„	„

**GREEN LANE WELLS—Monthly Samples.**

Source.	Date.	Time of Collecting.	Time of Investment.	No. of Bacteria.	B. Coli Comm.	B. Ent. Sporog.
G. Holt Well	Jan. 23rd	1 13 p.m.	3 0 p.m.	50	Absent.	Absent.
"	Feb. 20th	12 55 p.m.	21st 10 30 a.m.	48	"	"
"	Mar. 27th	9 15 a.m.	6 30 p.m.	26	"	"
"	April 28th	2 25 p.m.	5 5 p.m.	17	"	"
"	May 25th	11 25 a.m.	3 0 p.m.	6	"	"
"	June 22nd	2 15 p.m.	4 0 p.m.	11	"	"
"	July 20th	9 5 a.m.	11 30 a.m.	48	"	"
"	Aug. 8th	10 15 a.m.	3 50 p.m.	144	"	"
"	Sept. 20th	9 8 a.m.	11 0 p.m.	32	"	"
"	Oct. 12th	1 30 p.m.	4 30 p.m.	34	"	"
"	Nov.	} Samples not taken, engines not working.				
"	Dec.					
J. Holmes Well	Jan. 23rd	1 15 p.m.	3 0 p.m.	Gelatine plate broken.		
"	Feb. 20th	1 0 p.m.	21st 10 30 a.m.	440	Absent.	Absent.
"	Mar. 27th	9 13 a.m.	6 30 p.m.	62	"	"
"	April 28th	2 30 p.m.	5 5 p.m.	46	"	"
"	May	} Sample not taken, engines not working.				
"	June 22nd	2 15 p.m.	4 0 p.m.	112	"	"
"	July 20th	9 5 a.m.	11 30 a.m.	40	"	"
"	Aug. 8th	10 20 a.m.	3 50 p.m.	104	"	"
"	Sept. 20th	9 11 a.m.	11 0 a.m.	240	"	"
"	Oct. 13th	9 15 a.m.	11 30 a.m.	5	"	"
"	Nov.	} Samples not taken, engines not working.				
"	Dec.					

**DUDLOW LANE—Monthly Samples.**

Source.	Date.	Time of Collecting.	Time of Investment.	No. of Bacteria.	B. Coli Comm.	B. Ent. Sporog.
Dudlow Lane	Jan. 23rd	1 38 p.m.	3 0 p.m.	22	Absent.	Absent.
"	Feb. 20th	1 20 p.m.	10 30 p.m.	240	"	"
"	Mar. 17th	9 38 a.m.	6 30 p.m.	14	"	"
"	April 28th	3 15 p.m.	5 5 p.m.	63	"	"
"	May 25th	11 55 a.m.	3 0 p.m.	12	"	"
"	June 22nd	2 40 p.m.	4 0 p.m.	17	"	"
"	July 20th	9 35 a.m.	11 30 a.m.	70	"	"
"	Aug. 8th	9 15 a.m.	3 50 p.m.	20	"	"
"	Sept. 20th	9 40 a.m.	11 0 a.m.	204	"	"
"	Oct. 12th	2 15 p.m.	4 30 p.m.	10	"	"
"	Dec. 7th	2 45 p.m.	5 0 p.m.	31	"	"

**WINDSOR WELL—Monthly Samples.**

Source.	Date.	Time of Collecting.	Time of Investment.	No. of Bacteria.	B. Coli Comm.	B. Ent. Sporog.
Windsor Well	Jan. 23rd	2 10 p.m.	3 0 p.m.	16	Absent.	Absent.
„	Feb. 20th	1 50 p.m.	10 30 a.m.	84	„	„
„	Mar. 27th	10 0 a.m.	6 30 p.m.	15	„	„
„	April 28th	3 55 p.m.	5 5 p.m.	43	„	„
„	May 25th	12 15 p.m.	3 30 p.m.	44	„	„
„	June 22nd	3 0 p.m.	4 0 p.m.	64	„	„
„	July 20th	9 55 a.m.	11 30 a.m.	75	„	„
„	Aug. 8th	8 30 a.m.	3 50 p.m.	18	„	„
„	Sept. 20th	10 15 a.m.	11 0 a.m.	126	„	„
„	Oct. 12th	3 0 p.m.	4 30 a.m.	67	„	„
„	Nov. 8th	1 40 p.m.	4 0 p.m.	38	„	„
„	Dec. 7th	1 30 p.m.	5 0 p.m.	35	„	„

**PRESCOT—MIXING WELL—Monthly Samples.**

Source.	Date.	Time of Collecting.	Time of Investment.	No. of Bacteria.	B. Coli Comm.	B. Ent. Sporog.
Mixing Well	Jan. 23rd	4 50 p.m.	6 45 p.m.	17	Absent.	Absent.
„	Feb. 20th	3 53 p.m.	10 30 a.m.	—	„	„
„	Mar. 28th	2 10 p.m.	5 0 p.m.	40	„	„
„	April 24th	2 8 p.m.	25th 10 30 p.m.	12	„	„
„	May 23rd	2 15 p.m.	4 0 p.m.	13	„	„
„	June 19th	1 58 p.m.	4 25 p.m.	224	„	„
„	July 17th	2 25 p.m.	3 15 p.m.	48	„	„
„	Aug. 8th	2 15 p.m.	3 50 p.m.	163	„	„
„	Sept. 12th	2 15 p.m.	4 15 p.m.	4	„	„
„	Oct. 9th	2 10 p.m.	4 0 p.m.	37	„	„
„	Nov. 5th	3 33 p.m.	5 20 p.m.	26	„	„
„	Dec. 4th	2 7 p.m.	4 30 p.m.	29	„	„



**PRESCOT—RIVINGTON WATER—Monthly Samples.**

Source.	Date.	Time of Collecting.	Time of Investment.	No. of Bacteria.	B. Coli Comm.	B. Ent. Sporog.
Rivington	Jan. 23rd	4 45 p.m.	6 45 p.m.	6	Absent.	Absent.
„	Feb. 20th	3 50 p.m.	10 30 a.m.	5	„	„
„	Mar. 28th	2 3 p.m.	5 0 p.m.	21	„	„
„	April 24th	2 5 p.m.	10 30 p.m.	5	„	„
„	May 23rd	2 5 p.m.	4 0 p.m.	4	„	„
„	June 19th	1 55 p.m.	4 25 p.m.	7	„	„
„	July 17th	2 5 p.m.	3 15 p.m.	6	„	„
„	Aug. 8th	2 5 p.m.	3 50 p.m.	8	„	„
„	Sept. 12th	2 5 p.m.	4 0 p.m.	1	„	„
„	Oct. 9th	2 5 p.m.	4 0 p.m.	27	„	„
„	Nov. 5th	3 25 p.m.	5 20 p.m.	28	„	„
„	Dec. 4th	2 5 p.m.	4 30 p.m.	28	„	„

**PRESCOT—VYRNWY WATER—Monthly Samples.**

Source.	Date.	Time of Collecting.	Time of Investment.	No. of Bacteria.	B. Coli Comm.	B. Ent. Sporog.
Vyrnwy	Jan. 23rd	4 40 p.m.	6 45 p.m.	8	Absent.	Absent.
„	Feb. 20th	3 45 p.m.	10 30 p.m.	4	„	„
„	Mar. 28th	2 0 p.m.	5 0 p.m.	16	„	„
„	April 24th	2 0 p.m.	10 30 a.m.	11	„	„
„	May 23rd	2 10 p.m.	4 0 p.m.	3	„	„
„	June 19th	1 50 p.m.	4 25 p.m.	12	„	„
„	July 17th	2 15 p.m.	3 15 p.m.	21	„	„
„	Aug. 8th	2 10 p.m.	3 50 p.m.	73	„	„
„	Sept.	Sample not taken, reservoir being altered.				
„	Oct. 9th	2 0 p.m.	4 0 p.m.	20	„	„
„	Nov. 5th	3 30 p.m.	5 20 p.m.	16	„	„
„	Dec. 4th	2 0 p.m.	4 30 p.m.	32	„	„

CLEANSING AND SCAVENGING.

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The benefit resulting from the continuance and extension of the practice of street washing was marked; the objections urged against this cleanly and salutary work have been entirely overcome. During the hot weather of last year, street washing was considerably extended; 250 streets were washed once a week, 105 streets twice a week, 12 streets three times a week, and all tunnel entrances to courts were washed three times a week. Also all cab stands were washed twice a week. The substitution of electric cars for horse cars and omnibuses has removed one of the greatest causes of street contamination. Improvements in the details of the methods of cleansing and scavenging the streets have been effected with corresponding advantages to the health and comfort of the inhabitants. Owing to the difficulties arising from bad planning of many of the streets of smaller houses, and the absence of adequate back passages, many obstacles have yet to be overcome before the collection and removal of domestic refuse can be regarded as satisfactory; but a most important advance has been made by the action of the Health Committee in giving facilities for the substitution of sanitary ashbins for the old insanitary ashpits. Contemplated amendments in the bye-laws will avert any extension of the mischief which results from defective ashpits.

At present the objectionable practice of depositing the contents of ash-pits upon the street surface, awaiting the arrival of the cart, has still occasionally to be resorted to, with the result that refuse and dust are blown about by the winds or scattered by traffic, or left where children can play with them.

The value of heavy rainfall in street washing, drain flushing, and so forth is very great. As has been shown in previous reports, it is an almost invariable experience that the choleraic disease of the summer and autumn months is highest when rainfall is low, and declines to its minimum when frequent, sudden and heavy, rather than continuous, rainfall occurs. The explanation is that in a fine warm summer, the accumulations of dust and dirt, largely unavoidable unless removed by washing, give rise to a filth-laden atmosphere, and the mischief which follows from such a condition. Consequently the full benefit of rain will only be experienced when the fall is heavy enough to exert a cleansing power.

The cleansing effects of heavy falls of rain were, as is always the case in the summer months, markedly beneficial. Attention to the cleansing of courts and alleys requires to be incessant, since the least relaxation in the efforts of the officers of the committee results at once in the grossest filthiness on the part of the occupants, most of whom are indifferent, and very many drunken.

No observant person can fail to notice the improvements in the condition not only of the main streets, but side streets and back streets also, in regard to cleansing and scavenging during the past year.

All private, domestic, and office drains are flushed by the City Engineer's staff twice a year, and there can be no question that a more frequent and very thorough flushing would be attended with great advantage.

The connection between cleanliness and health is indicated by the table showing the association of rainfall with diminished mortality from choleraic diarrhœa, during the last twenty years, six of which were

average wet summers, with relatively low mortality, and fourteen were average dry summers, with considerably higher mortality; the extremes being 1891 and 1895:—

Period.		Average Annual Rainfall, June to September.		Annual Average of Deaths from Zymotic Diarrhoea during the Third Quarter of the year.		
Six years	...	13·8 inches	...	{ Average wet Summers }	... 373	
Fourteen years		10·9 inches	...	{ Average dry Summers }	... 573	
Extreme years.	{ Year 1891	...	16 inches	...	{ Wet Summer }	... 203
	{ Year 1895	...	7·7 inches	...	{ Dry Summer }	... 819

The difference in rainfall in the two years 1891 and 1895 means that upwards of 900 millions of gallons of water were distributed to the then city in the season of low mortality, which were absent in the year of high mortality.

It may be necessary to explain that public cleanliness is only one factor in the prevention of this form of disease, but at the same time it is one of the most important, and it is easy to see the benefits which must result when Nature applies an additional 900 million gallons of water to cleansing purposes.

The City Engineer has kindly supplied the following tables, which indicate the magnitude of the operations carried out by that portion of the staff under his control:—



TABLE No. 1.  
NIGHT SERVICE  
FOR EMPTYING COURT, &c., ASHPITS, AND MIDDENS.

Middens have been practically abolished in the Old City, and consequently the operations of the night service are now limited to the removal of domestic and office refuse from the neighbourhood of the Exchange, where it would be impracticable to perform the work during the business hours of the day.

Notices Received.	Total Number of Collections from Ashpits, etc.	Total Number of Loads of Ashes, etc., Collected.	Depots at which Refuse was Deposited.			Average Working Staff per night.				Analysis of Work.		Average quantity removed from each Ashpit at each collection.
						Ashpit Men.	Wharf Men.	Carts.	Horses.			
			Chisen-hale Street.	Sandhills.	Queen's Half-tide Dock.					Loads per Man per Night.	Loads per Cart per Night.	Cart Loads.
636	4198	4754	4754	...	...	6·8	1·	3·1	3·1	2·2	4·9	1·1

TABLE No. 2.  
SERVICE FOR THE COLLECTION AND REMOVAL OF DRY ASHPIT ASHES.

Notices Received.	Total Number of Collec- tions from Ashpits.	Loads of Dry Ashes.										Average Daily Working Staff.			Analysis of Work.		Average quantity removed from each Ashpit at each Collection			
		Depots at which Refuse was Deposited.								Total Number of Loads Removed.	Ashpit Men.			Carts and Wagons.		Horses.		Loads per day.	Loads per Cart per Day.	
		Chisenhale Street.	Sandhills.	Queen's Half-tide Dock.	Rathbone Road Destructor.	Smithdown Road Destructor.	St. Domingo Destructor.	Rubbish Tips, &c.	No.		No.	No.								
3,167	627,587	107,769	Loads. 14,425	Loads. 11,271	Loads. 17,409	Loads. 9,450	Loads. 12,041	Loads. 17,029	Loads. 26,144	No. 129·5	No. 80·7	No. 84·7	No. 2·6	No. 4·2	Load. ·17					

It will be observed that the number of notices received to empty ashpits is only ·5 per cent. of the total collections.

The number of brick ashpits within the old City and Added Areas is approximately 65,000, and the figures show that the average number of times each ashpit was emptied during the twelve months was 9·6. From the 65,000 pits 107,769 loads were removed, or an average at each time of emptying of 0·17 of a load.

**TABLE No. 3.**  
**SERVICE FOR THE COLLECTION AND REMOVAL OF BELL CART ASHES.**

The bell cart service provides for the daily removal of domestic refuse from shops, business premises, and dwelling-houses where no permanent receptacles exist for the storage of this description of refuse. The service has to be conducted within certain limited hours of the morning to suit the convenience of occupiers and exigencies of business.

Total Quantity of "Bell Cart" Ashes Collected.	Depots at which Refuse was Deposited.						Average Number of Carts Employed per day.	Average Quantity of Refuse Collected per day.
	Chisenhale Street.	Sandhills.	Queen's Half-Tide Dock.	Rathbone Road Destructor.	Smithdown Road Destructor.	St. Domingo Destructor.	Rubbish Tips.	
Loads.	Loads.	Loads.	Loads.	Loads.	Loads.	Loads.	Loads.	Loads.
25,850	10,462	2,578	7,035	1,366	2,579	905	925	82·8

TABLE No. 4.

SERVICE FOR FLUSHING AND CLEANSING TROUGH WATER CLOSETS, &c.

Underground Conveniences.	Urinals.	Number of Trough Water Closets.	Average Working Staff.	
			Trough W. C. Men.	Underground Conveniences and Urinal Men.
22—177 Stalls	194—547 Stalls	2,000	32.6	17, and 4 employed part time only.

The frequent flushing of trough water closets is essentially a sanitary measure, especially as this form of closet is provided principally in the more densely-populated portions of the City. During the Summer months a large number of the public urinals and trough water closets are cleansed and disinfected twice daily, and during the remaining part of the year once daily.



TABLE No. 5.  
SERVICE FOR THE CLEANSING OF STREETS, COURTS, AND PASSAGES, AND THE COLLECTION OF REFUSE

THEREFROM, &c.

During the year 1900, 87,153 loads of sweepings were collected. This quantity includes a proportion of ashpit and domestic refuse deposited on the surface of streets by occupiers of abutting premises, notwithstanding that special Lay Stalls and Galvanized Bins for the reception of this description of refuse are provided.

Total Number of Loads Removed.	Depôts at which Refuse was Deposited.						Average Daily Staff.				Average Number of Loads Removed Daily per Cart.
	Chisenhale Street.	Sandhills.	Waverley.	Queen's Half-tide Dock.	Rubbish Tips.	Destructors.	Sweeping Machines per day.	Average Number of Men Employed per day.	Carts.	Horses.	
87,153	Loads. 39,660	Loads. 8,445	Loads. 4,214	Loads. 14,509	Loads. 20,317	Loads. 8	7·1	505·1	75·2	82·3	3·7

**TABLE No. 6.**  
**CLEANSING AND REMOVAL OF REFUSE FROM STREETS, COURTS, AND PASSAGES ON SUNDAYS.**

A number of the principal streets in the central parts of the City are cleansed on Sunday mornings, and, as a sanitary measure, domestic refuse is collected from some districts of the City.

Loads of Street Sweepings.										Average Daily Staff.		
Removed.			Depots at which Refuse was Deposited.									
			Chisenhale Street.		Sandhills.		Queen's Half-Tide Dock.		Tips.			
Saleable Refuse.	Unsaleable Refuse.	Total.	Saleable Refuse.	Unsaleable Refuse.	Saleable Refuse.	Unsaleable Refuse.	Saleable Refuse.	Unsaleable Refuse.	Saleable Refuse.	Unsaleable Refuse.	Men.	Horses.
1,635	3,042	4,677	1,563	629	72	572	—	1,121	720		230·4	39·3

TABLE No. 7.

SERVICE FOR STREET WATERING.

A great quantity of water is spread upon the streets during the summer months, and a small proportion of the total quantity is also used for street washing during the year under certain conditions of the weather. It may be taken that upwards of 55 million gallons of water were distributed during the season.

Number of Days on which Carts were out.	Loads of Water Distributed.		Average Daily Staff employed during the Season.		Average No. of Loads distributed Daily per Cart.
	Large.	Small.	Watermen.	Carts and Horses.	
	139	170,242	17,657	23	

**TABLE No. 8.**

**REMOVAL OF GARBAGE FROM ABATTOIR.**

Loads Removed.	Where Deposited.		
	Chisenhale Street.	Sandhills.	Queen's Half-Tide Dock.
2,097	2,085	12	—



TABLE No. 9.

COLLECTION OF HORSE, COW, AND FOWL MANURE.

TOTAL QUANTITY COLLECTED.				DEPÔTS AT WHICH REFUSE WAS DEPOSITED.											
				CHISENHALE STREET.			QUEEN'S HALF-TIDE DOCK.			SANDHILLS.			WAVERTREE.		
Horse.	Cow.	Fowl.	Total.	Horse.	Cow.	Fowl.	Total.	Horse.	Cow.	Fowl.	Total.	Horse.	Cow.	Fowl.	Total.
461	—	—	461	377	—	—	377	—	—	—	—	54	—	—	54
Loads.			Loads.	Loads.			Loads.					Loads.			Loads.

TABLE No. 10.  
DESPATCHES OF MANURE AND REFUSE.

DEPÔTS.	Quantity of Saleable Refuse.			Quantity of Unsaleable Refuse.						Grand Total in Tons.	Average Daily Staff.	
	Street Sweepings	Mixture.	Total.	Con-tractors	Farmers.	Depôts.	Sea.	Des-tractors.	Sundry Tips.		Inspectors and Foremen.	Labourers
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.			
Chisenhale St., by Flats...	...	4,944	4,944	...	33,600	2,112	...	...	...	40,656	}	16
Sandhills do. ...	...	...	...	...	6,336	...	...	...	...	6,336		
Do. by Rail ...	329	...	329	...	5,951	...	...	...	...	6,280		
Wavertree do. ...	3,120	...	3,120	...	...	...	...	...	...	3,120	...	1.5
Chisenhale Street and Sandhills, <i>via</i> Stanley D'k	...	...	...	...	...	...	3,501	...	...	3,501	}	3.2
per "Alpha" .....	...	...	...	...	...	...	61,880	...	...	61,880		
per "Beta" .....	...	...	...	...	...	...	...	...	...	...		
Queen's Half-Tide Dock ...	...	...	...	...	...	...	...	...	...	...	...	...
Do., per "Alpha" .....	...	...	...	...	...	...	56,047	...	...	56,047	}	42.4
Do., per "Beta" .....	...	...	...	...	...	...	5,810	...	...	5,810		
Chisenhale St. Destructor..	...	...	...	...	...	...	...	48,006	...	48,006		
Rathbone Road " .....	...	...	...	...	...	...	...	10,582	...	10,582	...	...
Smithdown Road " .....	...	...	...	...	...	...	...	10,646	...	10,646	...	...
St. Domingo " .....	...	...	...	...	...	...	...	23,120	...	23,120	...	...
Sundry Tips " .....	...	...	...	...	...	...	...	...	57,727	57,727	...	...
	3,449	4,944	8,393	...	45,887	2,112	127,238	92,354	57,727	333,711	2	63.1

The foregoing Table shows that in all not less than 333,711 tons of town refuse have been disposed of by the various means available for the purpose. Large as the total is, it does not represent the quantity actually collected and carted to the Wharves, as during the Winter months a large proportion of the street sweepings consists of a quantity of water, which drains away before the refuse is despatched from the Wharves or Railway Sidings.

TABLE No. 11.

HORSES.—DAILY AVERAGE NUMBER.

Deals with the Horses employed on the work of the Cleansing Department.

Night Ash Removal.	3.1	Dry Ash Removal	84.7	Sundry Ash Tips.	...	Bell Ash Removal.	24.6	Street Scavenging.	73.9	Sweeping Machines, Day.	7.1	Wharves.	.2	Market.	1.4	Watering.	16.7	Abattoir.	1.6	Canals.	2.7	Total.	216.0
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TABLE No. 12.

AVERAGE DAILY STAFF OF MEN EMPLOYED.

Dealing with the number of men actually employed upon the different services, it will be noted that there is a total of 800 men constantly employed. There are 2,000 trough closets in the City which are cleansed once daily in Winter, and in a large number of cases two or three times daily in Summer ; 32 men being employed on this work.

129 men are specially engaged in connection with the collection of ashpit refuse, and have proved sufficient to keep the 65,000 ashpits at the present time existing in the City in a thoroughly cleanly condition, the average collection being 9·6 times during the year for each ashpit.

In connection with the disposal of the refuse 69 wharf labourers are employed in addition to 34 men employed upon the steam hoppers and canal barges.

General.	Night Service.				Day Service.																Wharves, Depots, &c.										Grand Total.				
	Inspectors.	Checker, &c.	Clerks.	Office Boy.	Total.	Inspectors.	District Storekeepers.	Watermen.	Barrow Men.	Sweepers.	Cart Followers.	Passage Men.	Gully Men	Washing Courts.	Trough Closet Men.	Casual.	Ash Men.	Boat Men.	Crews Hopper Barges.	Orderly Boys.	Total.	(Inspector.	Labourers.	Chisenhale St. and Sandhills.	Inspector.	Labourers.	Queen's Hall-Tide Dock.	Foreman.	Gorsev Lane, Aintree, and Ford.	Foreman.	Labourers.	Various Town Deposit Places.	Foreman.	Labourers.	Stanley Dock.
4.	..	2.	1.	10.	1.	27.	11.5	10.7	83.	191.7	95.	37.	1.5	4.9	32.6	9.5	129.5	10.8	23.5	44.	712.2	1.	16.	1.	42.4	1.	.9	..	4.	..	3.2	69.5	800.5		





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# INSANITARY PROPERTY.

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## INSANITARY PROPERTY.

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The year 1900 was occupied in dealing with the property which had been reported as insanitary on the 21st February, 1899, and which constituted the 16th Presentment of the Grand Jury, dated 19th December, 1899.

There was no further Presentment, but during the year the Medical Officer of Health certified that the following premises were unfit for human habitation, and ought to be demolished. The reports were laid before the Council and referred to the Housing Committee, who purchased the property, and caused it to be demolished:—

The dwelling-houses numbered 53, 57, 59, 61 and 63 in GILDART'S GARDENS, in the City of Liverpool.

The Court known as No. 7 court in CLIVE STREET, in the City of Liverpool.

The dwelling-houses numbered 1, 3, 5, 7, 9, 11, 13 and 15 in the said No. 7 court.

The dwelling-houses numbered 39 and 41 in CLIVE STREET, aforesaid, contiguous to No. 7 court in the said street.

The court known as No. 8 court in SHELLEY STREET, in the said City.

The dwelling-houses numbered 2, 4, 6, 8, 10, 12, 14 and 16 in the said No. 8 court.

The dwelling-houses numbered 18 and 20 in SHELLEY STREET aforesaid, contiguous to No. 8 court in the said street.

The court known as No. 12 court in SHELLEY STREET, in the said City.

The dwelling-houses numbered 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21 and 23 in the said No. 12 court.

The dwelling-houses numbered 30 and 32 in SHELLEY STREET aforesaid, contiguous to No. 12 court in the said street.

The amount of insanitary property still remaining is a matter of considerable interest.



In 1890 a careful enumeration of every court existing in the City was made, and particulars as to its construction recorded. These particulars show the width of the court, the character of the houses adjoining it, the kind of entrance, the situation of the trough-closet, and receptacle for ashes, state of repair, &c. ; the return also showed the number of houses in the court, and the number of front houses adjoining it.

The number of courts in 1890 was 2165, and the average number of houses, including front houses, was approximately seven ; the total number of houses, therefore, including those facing the streets but abutting on courts in 1890 was approximately 15,155. Since 1890, however, the number of courts has fallen to 1,195, that is to say there are 970 fewer courts now than existed in 1890. Consequently, assuming that the average ascertained in 1890 was not disturbed, the number of houses, either in or abutting on courts at the middle of 1900, has been lessened by 6,790. At the close of the year the number of remaining houses may therefore be estimated to be about 7,500, that is, half the number which existed in 1890. During each of the past ten years an approximate average of 97 courts or 679 houses have disappeared annually, 366 of this number have been demolished by the Insanitary Property Committee, and 313 have been removed annually in other ways, some few under the orders of the Building Surveyor as being unsafe, but the great majority have been taken down to make room for the extension of trades and business undertakings.

It will be seen therefore that the growth of commerce has very materially assisted the work of the Insanitary Property Committee. There is no reason whatever to doubt that in the future this same agency will continue to operate, but to what extent is not a matter of absolute certainty. It must also be borne in mind that a considerable number of insanitary houses at present standing have been untenanted for many years, and have been allowed to become derelict and ruinous ; it must not be assumed that every insanitary house is tenanted.

For many years it has been the aim of the Insanitary Property Committee to deal with insanitary houses as speedily as circumstances will permit ; the average of the last 10 years shows that that Committee has dealt with 366 insanitary houses per annum, and, however desirable it may be to do more, it is doubtful whether the Committee will find it possible to deal with a larger number than 700 annually ; the fear rather is that the limit will be found to be reached at a much lower figure.

In so far-reaching and wide a subject as the housing of the labouring classes, there is naturally much room for divergence of opinion. In advocating the desirability of re-housing the people near to their work, the opinion is from time to time expressed that the same number of people who have been displaced must be re-housed upon the sites from which the insanitary property has been removed. No consideration is given to the fact that if this is done the congestion of the people will be as bad as ever it was, nor is it taken into account that in many instances the sites themselves are wholly and entirely unsuitable for the working classes by reason of surrounding warehouses and lofty buildings which shut out the sun, or by reason of the low-lying situation of the sites. Another circumstance which is lost sight of is the fluctuating character of the work, thousands of labourers and their families shifting from place to place and following the work of the contractors at one time at one part, and another time at another part of the city. At present the tendency is to locate in the neighbourhood of the Queen's Dock where extensive works are about to be carried on. Indeed, as the result of a careful inquiry taken in one of the most densely populated labourers' streets, it was found that considerably more than 50 per cent. were engaged in work from a mile and a half to two miles away from their place of residence. These facts prove the practicability of providing for some at least of the dispossessed tenants in the less crowded parts of the city, but within easy access of tram and train. The advantages to the labourers and their families of living in a purer air, and amongst healthier surroundings, cannot be questioned.

It is a remarkable fact that notwithstanding the removal of insanitary property in Scotland District, the decrease in population which had been so marked during the 10 years ending 1891, had practically ceased during the last 10 years. In Exchange District, also, the same thing is to be noticed, but to a somewhat less marked degree.

During the year the areas upon which this insanitary property stood have been cleared, and now await the erection of suitable dwellings.

In November last, the name of the Committee was changed from "Insanitary Property Committee" to that of "Housing Committee" as being suggestive of the changing aspect of the work.

Rebuilding of houses suitable for the accommodation of displaced tenants has proceeded with activity, and photographs are appended showing some of the dwellings recently erected. The following description is given by the Deputy Surveyor of the—

DRYDEN STREET DWELLINGS.

The site was acquired under “The Liverpool Sanitary Amendment Act, 1864,” and the dwellings erected under the “Housing of the Working Classes Act, 1890, Part III.”

These dwellings are almost entirely completed, six out of a total of seven blocks having been taken over from the contractors, and tenants are now being selected.

There are 182 dwellings in all, this number including a keeper’s house, in addition to which there is provided a Recreation Room (none such having hitherto been provided) for the use of the tenants in common, and an office.

The disposition of the dwellings is as under, viz..

6	Four-roomed dwellings.	
16	Three	„
160	Two	„

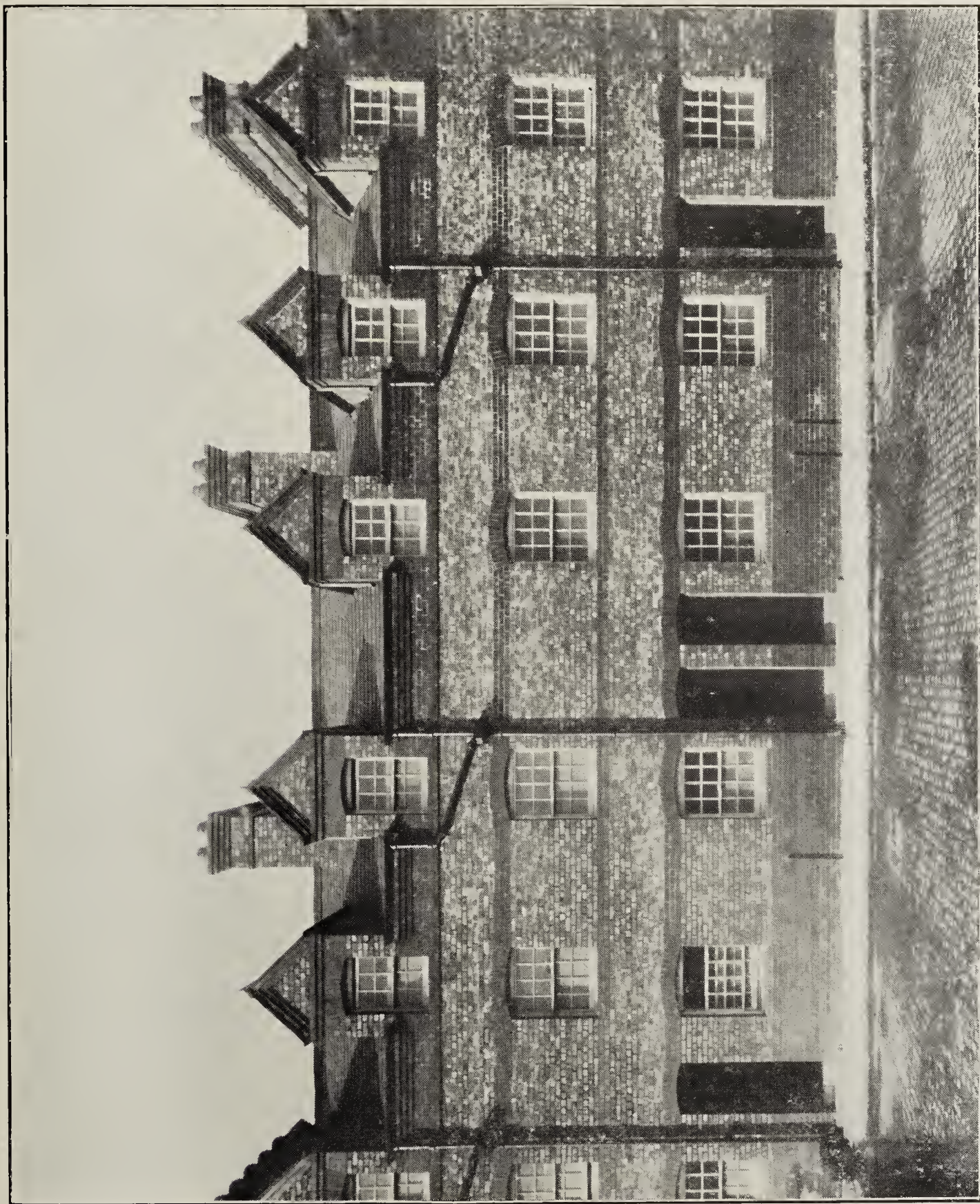
the four and three-roomed dwellings, with 28 two-roomed dwellings, being placed on the ground floor, each of these being provided with separate scullery, yard, and w.c.

The remainder of the two-roomed dwellings are situate on the first and second floors respectively, each of the dwellings being provided with separate w.c., and in the case of one series, with separate scullery.

The whole of the tenements are provided with a hot water supply (a new feature in connection with municipal dwellings in Liverpool).

Gas is laid on and will be supplied to each tenement, if required, by means of automatic meter.





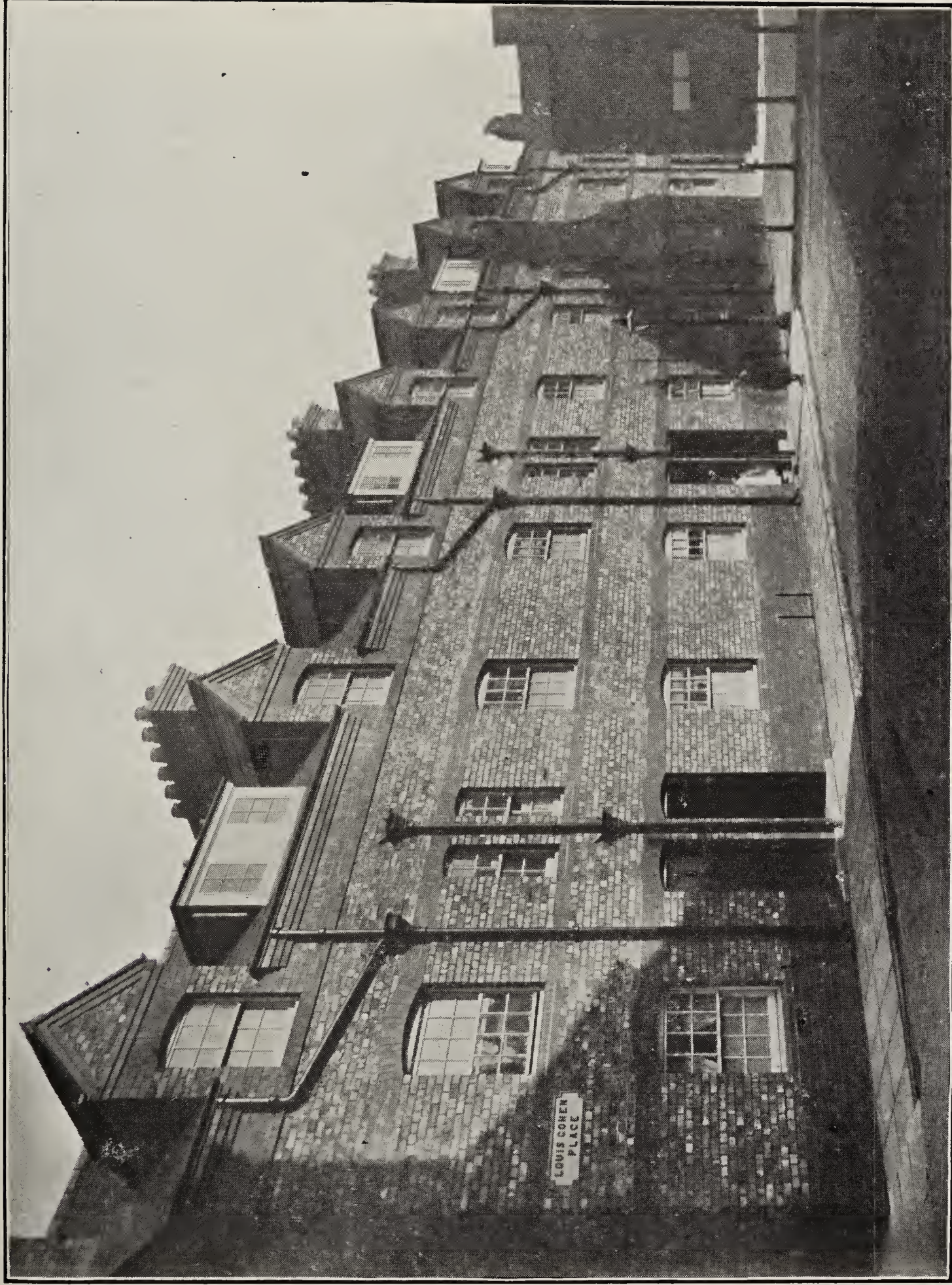
### DRYDEN STREET.

Recently erected Labourers' Dwellings which have replaced Insanitary Areas.









# **DRYDEN STREET.**

Recently erected Labourers' Dwellings which have replaced Insanitary Areas.









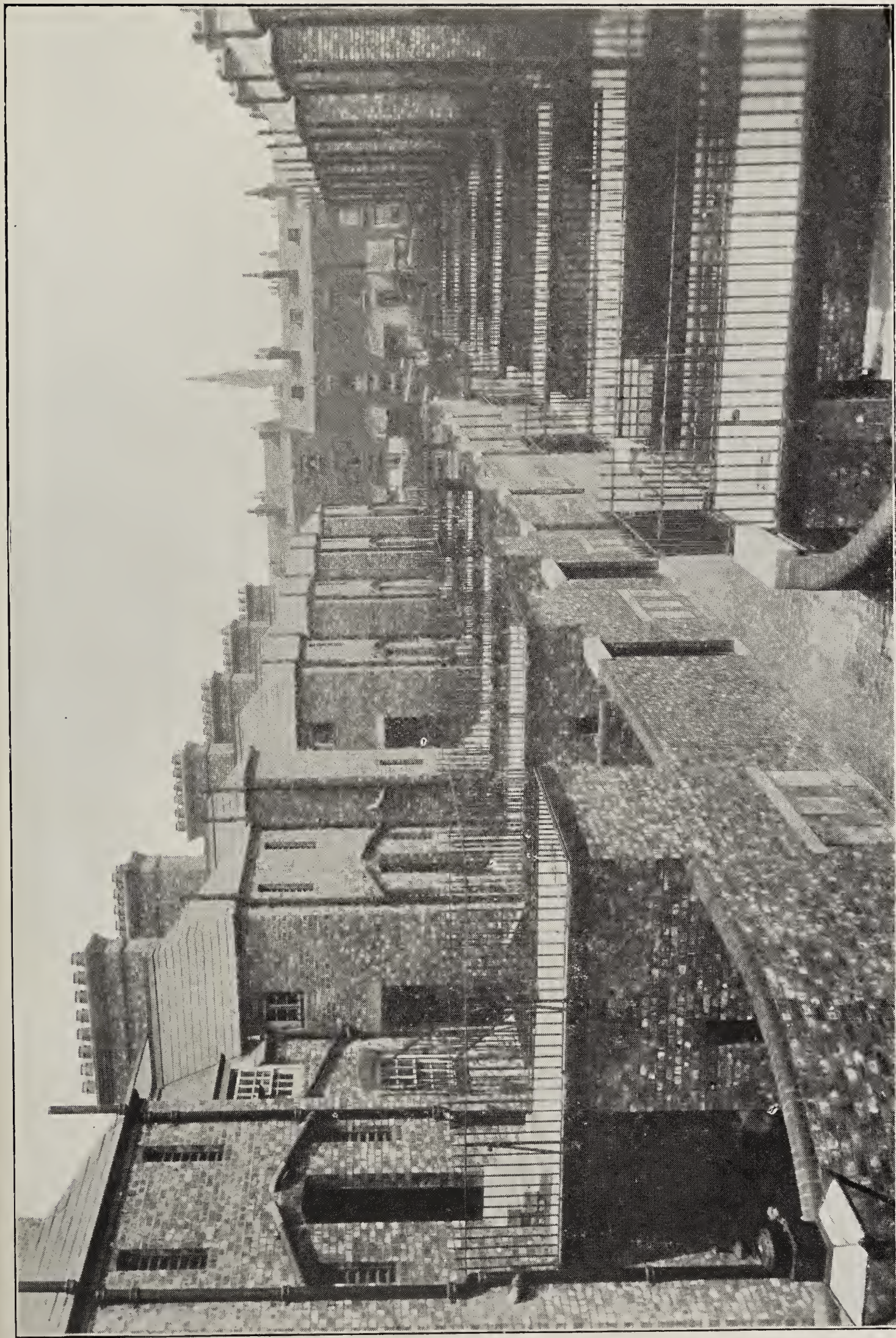
**DRYDEN STREET.**

Recently erected Labourers' Dwellings which have replaced Insanitary Areas.









**LABOURERS' DWELLINGS—DRYDEN STREET.**

View showing Back Passages, Yards, and Entrance to Upper Tenements.





The rents of the respective tenements have been fixed as under, viz.:

GROUND FLOOR.

6	Four-roomed tenements	...	...	@ 6s. 0d. per week, each.
16	Three „	„	...	„ 4s. 6d. „ „
28	Two „	„	...	„ 4s. 0d. „ „

FIRST AND SECOND FLOORS.

132	Two-roomed tenements	...	...	@ 3s. 0d. per week, each.
-----	----------------------	-----	-----	---------------------------

Total number of rooms, 392.

Total gross rental, per week	...	£30 16s. 0d.
„ „ „ „ annum	...	£1,601 12s. 0d.

The estimated cost of these dwellings is as under:—

Land	...	£ 4,173
Buildings (including hot water supply)	...	£26,278
		<u>£30,451</u>

The sizes of the rooms in the respective tenements are as follow, viz.:—

4-roomed tenements, Living room	...	15ft. 0in. by 10ft. 6in.
2 Bedrooms each	...	12ft. 0in. „ 10ft. 9in.
Another Bedroom...	9ft. 3in. „ 9ft. 0in.	
3-roomed tenements, Living room	..	15ft. 0in. „ 10ft. 6in.
One Bedroom	..	12ft. 0in. „ 10ft. 9in.
One „	...	12ft. 0in. „ 9ft. 6in.
2-roomed tenements, Living room	...	15ft. 0in. „ 10ft. 9in.
(ground floor) Bedroom	...	11ft. 6in. „ 10ft. 0in.
2-roomed tenements, Living room	...	11ft. 0in. „ 11ft. 0in.
(1st & 2nd floors) Bedroom	...	10ft. 0in. „ 8ft. 6in.



The rooms on the ground and first floor have a clear height of 8 feet, while in those on the second floor the height is greater, viz., 9ft. 6in., owing to being partly in the roof.

In addition to the dwellings enumerated in the foregoing statement, the Corporation are about to erect other dwellings and further schemes are in contemplation.

Building operations are now in progress in

<u>Kempston Street,</u>	}	for the erection of 79 dwellings,
<u>Constance Street, and</u>		
<u>Gildart Street,</u>		

and in

<u>Fontenoy Street</u>	„	„	16	„
------------------------	---	---	----	---

Plans have been approved, and the sanction of the Local Government Board has now been obtained for the erection in

<u>Kew Street and Newsham Street</u>	...	...	of 114	„
<u>Clive Street and Shelley Street</u>	...	...	„ 90	„
<u>Arley Street</u>	...	...	„ 4	„

There is also contemplated the erection, in the

<u>Adlington Street area</u>	...	...	of 251	„
------------------------------	-----	-----	--------	---

and in

<u>Gildart's Gardens, &amp;c.</u>	..	...	„ 139	„
-----------------------------------	----	-----	-------	---

the total number of additional dwellings to be erected being 693.

The following rates of mortality affecting Victoria Square and Juvenal Buildings will be read with interest.

VICTORIA SQUARE AND JUVENAL BUILDINGS.

DEATH RATE.

<u>Year.</u>		<u>Deaths.</u>		<u>Rate.</u>
1896	..	33	...	21·1 per 1000
1897	..	30	.	19·1 „
1898	..	37	...	23·6 „
1899	...	34	...	22·6 „
1900	...	28	..	18·6 „
		Average	...	21·0 „

The Corporation Surveyor has kindly supplied the following tables:—

INSANITARY PROPERTY.

INSANITARY PROPERTY PURCHASED, 1900 -

Number of houses included in 16th Presentment	...	...	559
Number of houses purchased by Insanitary Property Committee included in Reports referred by Council to Committee	...		34
Total	...	...	593

INSANITARY PROPERTY DEMOLISHED, 1900—

Number of houses included in 15th Presentment	...	...	60
„ „ 16th Presentment	...	...	492
Number of houses demolished by Insanitary Property Committee included in Reports referred by Council to Committee	...		34
Total	...	...	586



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# CITY HOSPITALS.

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## HOSPITAL ACCOMMODATION.

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Further progress has been made in the extension of hospital accommodation for persons suffering from certain forms of infectious sickness.

The erection of wards for the accommodation of 82 patients, together with the necessary administrative offices, upon a suitable part of the site at Fazakerley has been completed, and some of the new pavilions are occupied.

The extension and improvement of the City Hospital East will result in increasing the accommodation for patients from 42 to 130 beds, and will also provide accommodation to the increased staff consequent upon this extension.

Means of isolation of whooping-cough are not yet available, and the only place for cases of Measles is a ward at the workhouse. A larger number of beds for measles is much wanted.

The present number of beds available for the various forms of infectious sickness is as follows:—

City Hospital North	...	...	...	140 beds.
„ South	...	...	...	88 „
„ East	...	...	...	42* „
„ Parkhill	...	...	...	166 „
„ Priory Road	...	...	...	37 „
„ Fazakerley	...	...	...	82 „
				—
				555 „

\* Will shortly be increased to 130.

These are apportioned approximately as follows:—

Smallpox	...	...	...	...	37	beds
Typhus Fever	...	...	...	...	20	„
Typhoid Fever	...	...	...	...	75	„
Scarlet Fever	...	...	...	...	331	„
Diphtheria	...	...	...	...	62	„
Isolation	...	...	...	...	30	„
					<hr/>	
					555	„

making a total of 555 beds, about 100 of which are in buildings of a temporary, and in some respects inconvenient character, which at no distant date will require to be taken down.

In addition to the foregoing there is a special hospital for the use of the Port Sanitary Authority; it was necessary, however, in addition to this, to set aside pavilions at Park Hill and at Netherfield Road to be in readiness in case Plague should make its appearance in the City.

A wide diffusion of Plague over the world, following the lines of sea-borne commerce, continued during the year. Several cases of Plague were brought to ports in this country, and at Glasgow the disease effected a foothold for a short time. The circumstances attending the outbreak in Glasgow were of much interest and importance, and the Medical Officer is indebted to Dr. Chalmers, the Medical Officer of Health of Glasgow, for the facilities afforded for investigating the circumstances which attended the outbreak in that City.

A few cases of either actual or simulated Plague arriving in the Port of Liverpool were dealt with at the Port Sanitary Hospital, and the pavilions set aside for Plague were required only for cases which it was deemed advisable to isolate, but which turned out to be forms of sickness other than Plague.

A small number of cases of Typhoid fever have been admitted into general hospitals during the year.

## INFECTIOUS DISEASE.

The following table shows the number and nature of cases of Infectious Disease coming under the notice of the Medical Officer of Health during 1900, including those reported under the Notification Act.

YEAR—1900.	FEVER.				Small Pox.	Scarlatina.	Measles.	Diphtheria.	Membranous Croup.	Puerperal Fever.	Erysipelas.	TOTAL.
	Typhus.	Typhoid.	Simple.	Relapsing.								
January .....	1	67	...	...	1	174	201	62	5	7	105	728
February ...	...	28	2	1	...	144	90	61	4	4	92	426
March.....	5	44	3	...	27	130	66	43	5	5	110	438
April .....	2	42	3	...	53	116	88	38	4	2	78	426
May.....	8	64	5	...	21	162	144	49	2	3	87	545
June .....	1	36	1	...	13	137	167	54	1	3	110	523
July .....	5	50	2	...	7	107	59	46	...	...	73	349
August .....	8	54	2	...	18	100	68	38	3	3	55	347
September...	2	100	...	...	6	192	222	60	2	11	75	670
October .....	1	111	5	...	8	233	448	77	8	3	87	981
November ...	4	72	3	...	2	239	398	72	3	6	87	888
December ...	5	63	2	...	...	234	421	69	3	8	129	934
TOTAL.....	42	731	28	1	156	1,968	2,372	669	40	55	1,088	7,255
Removed to hospital...	41	450	7	...	154	1,198	108	306	6	2	296	2,568

The number of patients removed to hospital includes those taken to general hospitals, as well as those taken to the city hospitals. (See page 191).



## THE INFECTIOUS DISEASE (NOTIFICATION) ACT.

The numbers of notifications received by the Medical Officer under the above Act, during the past five years, were as follows:—

	<u>1896.</u>	<u>1897.</u>	<u>1898.</u>	<u>1899.</u>	<u>1900.</u>
January ...	466	560	445	617	464
February ...	493	461	363	475	344
March ...	454	538	407	459	364
April ...	484	414	397	446	382
May ...	517	414	451	471	436
June ...	523	380	389	495	369
July ...	517	392	347	414	322
August ...	644	559	383	348	313
September ...	770	626	458	482	456
October ...	933	742	578	562	573
November ...	774	629	588	513	519
December ...	634	519	564	460	525
	<u>7,209</u>	<u>6,234</u>	<u>5,370</u>	<u>5,742</u>	<u>5,067</u>

The diseases were specified as follows:—

	<u>1896.</u>	<u>1897.</u>	<u>1898.</u>	<u>1899.</u>	<u>1900.</u>
Smallpox ...	11	7	16	17	167
Scarlet Fever ...	3,610	3,042	2,422	2,451	2,008
Typhoid Fever ...	1,122	1,112	955	1,064	828
Typhus Fever ...	185	110	96	52	27
Continued Fever .	120	80	62	84	54
Relapsing Fever ..	5	1	2	—	2
Fever ...	26	18	14	19	2
Puerperal Fever..	67	64	47	57	54
Diphtheria ...	492	394	527	798	710
Membranous Croup.	95	69	62	53	51
Erysipelas ...	1,476	1,337	1,167	1,145	1,163
Anthrax ...	—	—	—	2	—
Choleraic Diarrhœa	—	—	—	—	1
	<u>7,209</u>	<u>6,234</u>	<u>5,370</u>	<u>5,742</u>	<u>5,067</u>

NUMBER OF CASES REPORTED AND NUMBER REMOVED TO HOSPITALS, 1889-1900

	SMALLPOX.		SCARLET FEVER.		TYPHOID.		TYPHUS.		MEASLES	
	Number Reported.	Number Removed.	Number Reported.	Number Removed.	Number Reported.	Number Removed.	Number Reported.	Number Removed.	Number Reported.	Number Removed.
1889 ..	9	8	1,832	533	670	302	158	124	3,175	104
1890 ...	2	2	3,520	938	506	296	103	87	4,013	152
1891 ..	21	21	1,176	448	588	350	175	156	2,262	160
1892 .	177	177	1,554	603	699	345	73	70	3,376	150
1893 ...	75	73	3,538	1,380	1,396	728	183	168	2,316	94
1894 ...	229	226	3,963	1,415	1,350	745	325	312	2,494	122
1895 ..	130	127	2,710	1,039	1,306	662	162	158	3,462	93
1896 ...	8	8	3,584	1,589	1,063	539	305	298	2,930	138
1897 ..	6	6	3,001	1,641	991	559	158	156	4,389	94
1898 ..	17	16	2,424	1,467	863	585	92	84	2,458	105
1899 ...	10	10	2,416	1,537	988	668	70	64	5,107	140
1900 ...	156	154	1,968	1,198	731	450	42	41	2,372	108

The following tables, prepared by the Medical Staff of each Hospital, show the number of patients, the nature of the illness, and the results, at each of the five City Hospitals during the year 1900:—

### CITY HOSPITAL NORTH, NETHERFIELD ROAD.

*Visiting Physician, Dr. RICHARDSON.*

*Resident Physician, Dr. ROBINSON.*

DISEASES.	Remaining Dec. 31st, 1899.	Admitted during 1900.	Total under Treatment, 1900.	Transferred to Park Hill Convalescent.	Transferred to Fazakerley Convalescent.	Discharged to Homes or other Hospitals.	Remaining Dec. 31st, 1900.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever .....	73	486	559	134	67	252	71	2	35	7·2
Enteric Fever.....	25	145	170	—	—	132	21	—	17	11·7
Typhus Fever .....	6	31	37	—	—	29	—	1	8	25·8
Diphtheria .....	—	42	42	—	—	12	20	4	10	23·8
Other Diseases ...	8	99	107	—	—	82	2	6	23	23·2
Totals .....	112	803	915	134	67	507	114	13	93	11·5

### SCARLET FEVER.

	AGE PERIODS.							Total.
	Under 5	5—10	10—20	20—30	30—40	40—50	50 upwards.	
No. of Cases .....	145	227	90	21	2	—	1	486
No. of Deaths .....	28	6	1	—	—	—	—	35
Percentage of Deaths	19·3	2·6	1·1	—	—	—	—	7·2

## ENTERIC FEVER.

	AGE PERIODS.							Total.
	Under 5	5—10	10—20	20—30	30—40	40—50	50 upwards.	
No. of Cases .....	10	21	56	32	18	7	1	145
No. of Deaths .....	—	—	7	3	6	1	—	17
Percentage of Deaths	—	—	12·5	9·3	33·3	14·2	—	11·7

## TYPHUS FEVER.

	AGE PERIODS.							Total.
	Under 5	5—10	10—20	20—30	30—40	40—50	50 upwards.	
No. of Cases.....	1	1	16	6	3	4	—	31
No. of Deaths .....	—	—	3	1	1	3	—	8
Percentage of Deaths	—	—	18·7	16·6	33·3	75·	—	25·8

## DIPHTHERIA.

	AGE PERIODS.							Total.
	Under 5	5—10	10—20	20—30	30—40	40—50	50 upwards.	
No. of Cases.....	15	16	8	3	—	—	—	42
No. of Deaths.....	5	3	2	—	—	—	—	10
Percentage of Deaths	33·3	18·7	25·	—	—	—	—	23·8



## OTHER DISEASES.

Disease.	Cases.	Deaths.
Measles .....	5 .....	1
Varicella .....	1 .....	—
Whooping Cough .....	1 .....	1
Tuberculosis .....	6 .....	4
Follicular Tonsillitis .....	4 .....	—
Pharyngitis .....	3 .....	—
Bronchitis and Broncho Pneumonia .....	10 .....	2
Pleurisy .....	3 .....	—
Pneumonia.....	22 .....	8
Gangrene of Lung .....	1 .....	—
Gastritis .....	2 .....	—
Enteritis.....	2 .....	—
Nephritis .....	4 .....	2
Meningitis .....	6 .....	5
Local Abscesses.....	5 .....	—
Malnutrition .....	1 .....	—
Febricula .....	4 .....	—
Unclassified .....	19 .....	—
	<u>99</u>	<u>23</u>
		<u>=23·2 % mortality.</u>

CITY HOSPITAL SOUTH, GRAFTON STREET.*Visiting Physician, Dr. N. E. ROBERTS.**Resident Physician, Dr. A. W. TUXFORD.*

DISEASE.	In Hospital 31st Dec., 1899.	Admissions, 1900.	Total under Treatment 1900.	Recoveries.	Transfers to Parkhill	Transfers to Fazakerley	Transfers to City Hospital North	Transfers to other Hospitals	Deaths	Mortality per cent. of Admissions 1900.	In Hospital 31st Dec., 1900.
Scarlet Fever.....	41	264	305	109	67	53	—	—	16	6·06	61
Enteric Fever.....	27	101	128	103	—	—	—	1	15	14·85	9
Diphtheria .....	10	108*	118	64	25	—	—	1	27	25·00	—
Typhus Fever.....	—	10	10	7	—	—	1	—	1	10·00	1
Measles .....	—	3	3	—	3	—	—	—	—	—	—
Other Diseases .....	3	90	93	57	4	—	—	8	18	20·00	6
Totals .....	81	576	657	340	99	53	1	10	77†	13·36	77

\* One case of Acute Diphtheria was admitted from Parkhill Convalescent Hospital and died within 12 hours.

† 6 deaths took place within 12 hours of admission, 12 within 24 hours, and 23 within 48 hours.

## CONVALESCENT CASES TRANSFERRED FROM PARKHILL.

DISEASE.	Number transferred.	Discharged Cured.
Scarlatina .....	18	18
Diphtheria .....	10	10
Other Diseases.....	2	2
Totals .....	30	30

## SCARLET FEVER.

	AGE PERIODS.							Totals.
	Under 5	5—10	10—20	20—30	30—40	40—50	50 upwards.	
No. of Cases .....	110	109	37	6	1	—	1	264
No. of Deaths .....	13	2	1	—	—	—	—	16
Percentage of Deaths	11·81	1·83	2·7	—	—	—	—	6·06

## ENTERIC FEVER.

	AGE PERIODS.						
	Under 5	5—10	10—20	20—30	30—40	40—50	Totals.
No. of Cases .....	7	19	24	33	16	2	101
No. of Deaths .....	—	1	3	5	5	1	15
Percentage of Deaths...	—	5·26	12·5	15·15	31·25	50·00	14·85

## DIPHTHERIA.

	AGE PERIODS.						Totals.
	Under 5	5—10	10—20	20—30	30—40	40—50	
No. of Cases .....	67	30	8	3	—	—	108
No. of Deaths .....	20	7	—	—	—	—	27
Percentage of Deaths...	29·85	23·33	—	—	—	—	25·00

## OTHER DISEASES.

	Cases.	Deaths.
Croupous Pneumonia .....	20	9
Broncho-pneumonia .....	4	—
Pleurisy .....	1	—
Phthisis .....	1	—
Laryngitis .....	1	—
Follicular Tonsillitis .....	13	—
Faucial Congestion .....	8	—
Rheumatic Fever.....	1	1
Acute Nephritis .....	1	1
Meningitis .....	4	3
Influenza .....	1	—
Syphilis .....	1	—
Tabes Mesenterica .....	1	—
Osteomyelitis .....	1	—
Septic Absorption.....	1	1
Diseases of Alimentary System.....	9	1
„ Nervous System .....	2	1
„ Genito Urinary System .....	2	—
„ Eyes .....	1	—
„ Heart .....	1	1
„ Skin .....	2	..
Malaise .....	8	—
Nil .....	6	—
	<u>90</u>	<u>18</u>

# CITY HOSPITAL, PARK HILL.

*Visiting Physician, Dr. N. E. ROBERTS.*

*Resident Physician, Dr. C. J. LINTON PALMER.*

DISEASES.	Remaining in Hospital on December 31st, 1899.	Patients admitted during 1900.				Total number under treatment during 1900.	Discharged Cured.	Transferred to City Hospital North.	Transferred to City Hospital South.	Transferred to City Hospital East.	Transferred to City Hospital Priory Road.	Transferred to Port Sanitary Hospital.	Fatal Acute Cases.		Remaining in Hospital on December 31st, 1900.
		Acute Cases.	Transferred from City Hospital North.	Transferred from City Hospital South.	Transferred from City Hospital East.								Number.	Percentage.	
Scarlet Fever .....	123	293	134	67	1	618	474	—	18	1	—	—	15	5·1	110
Diphtheria .....	6	120	—	25	—	151	101	—	11	—	—	—	14	11·6	25
Small Pox .....	—	54	—	—	—	54	39	—	—	—	7	—	8	14·8	—
Chicken Pox .....	—	12	—	—	—	12	12	—	—	—	—	—	—	—	—
Measles .....	3	5	—	3	—	11	11	—	—	—	—	—	—	—	—
Typhoid Fever .....	—	2	—	—	—	2	—	—	—	—	—	—	—	—	2
Typhus Fever .....	6	3	—	—	—	9	6	1	—	—	—	—	1	33·3	1
Observation and Other Diseases ...	—	64	—	4	—	68	60	—	2	—	—	1	3	4·4	2
Total .....	138	553	134	99	1	925	703	1	31	1	7	1	41	7·4	140

No fatal transferred cases.

## ACUTE SCARLET FEVER.

	AGE PERIODS.					
	Under 5	5—10	10—20	20—30	30 upwards.	Total.
No. of cases .....	87	124	63	16	3	293
No. of deaths .....	12*	2	1	—	—	15*
Percentage of deaths .....	13·8	1·6	1·58	—	—	5·1

\* Two of these cases were admitted in 1899.



ACUTE DIPHTHERIA.

	AGE PERIODS.					
	Under 5	5—10	10—20	20—30	30 upwards.	Totals.
No. of cases .....	43	45	18	13	1	120
No. of deaths .....	10	4	—	—	—	14
Percentage of deaths.....	23·2	8·8	—	—	—	11·6

SMALL POX.

	AGE PERIODS.						
	Under 10	10—20	20—30	30—40	40—50	Up- wards.	Totals.
No. of cases.....	6	10	22	6	4	6	54
No. of deaths .....	2*	—	1*	3	—	2	8
Percentage of deaths...	33·3	—	4·5	50	—	33·3	14·8

\* Unvaccinated.      8 unvaccinated cases, 3 deaths (37·5 per cent.)

	Cases.	Deaths.
MEASLES .....	8	—
CHICKEN POX.....	12	—
TYPHUS .....	3	1
TYPHOID .....	2	—

## OTHER DISEASES AND OBSERVATION CASES.

	Admitted.	From Other Hospitals.	Total.	Died.	Transferred.
Observation .....	28	—	28	—	2
Tonsillitis .....	9	3	12	—	—
Pneumonia .....	2	—	2	1	1
Skin Diseases .....	16	1	17	—	—
Suppurating Glands .....	5	—	5	—	1
Enteritis .....	1	—	1	1	—
Cancer of Stomach .....	1	—	1	1	—
Neuritis .....	1	—	1	—	—
Rheumatism .....	1	—	1	—	—
	64	4	68	3	4

CITY HOSPITAL EAST, MILL LANE.

*Visiting Physician, DR. H. A. CLARKE.*

DISEASES.	Remaining in Hospital 31st Dec., 1899.	Admitted into Hospital during 1900.	Admitted from Park Hill Hospital.	Total under Treatment during 1900.	Died.	Discharged to homes.	Remaining in Hospital, 31st Dec., 1900.	Mortality % of Admissions.
Scarlet Fever .....	27	136	1	164	8	129	27	5·8
Enteric Fever.....	12	62	—	74	13	54	7	20·9
Other Diseases .....	1	19	—	20	6	13	1	31·6
Totals .....	40	217	1	258	27	196	35	12·4

## SCARLET FEVER.

	AGE PERIODS.						
	Under 5	5—10	10—20	20—30	30—40	50 Upwards	Total.
No. of Cases.....	38	62	28	5	3	1	137
No. of Deaths.....	7	1	—	—	—	—	8
	18·4	1·6	—	—	—	—	5·8

One died, 48 hours after admission.

## ENTERIC FEVER.

	AGE PERIODS.							
	Under 5	5—10	10—20	20—30	30—40	40—50	50 Upwards	Total.
No. of Cases.....	1	11	21	13	13	2	1	62
No. of Deaths.....	1	—	3	3	4	1	1	13
	100·	0·	14·2	23·	30·7	50·	100·	20·9

Four died within 7 days of admission.

One „ 49 hours of admission.

One „ 25 „ „

One „ 20 „ „

## OTHER DISEASES.

	Admitted.	Died.	Death Percentage.
Pneumonia .....	6 .....	— .....	—
Broncho-pneumonia .....	4 .....	— .....	—
Influenza .....	1 .....	— .....	—
Plumbism .....	1 .....	— .....	—
Gastric Ulcer .....	1 .....	— .....	—
Phthisis .....	1 .....	1 .....	100·
Alcoholism and Peripheral Neuritis .....	1 .....	1 .....	—
Cerebral Dropsy .....	1 .....	1 .....	—
Meningitis .....	3 .....	3 .....	—
	<u>19</u> .....	<u>6</u> .....	<u>31·6</u>

CITY HOSPITAL, PRIORY ROAD.

Visiting Physician, DR. ARCHER.

DISEASE.	Remaining in Hospital, December, 1899	Admitted Acute Cases during 1900.	Admitted Convalescent Cases from Parkhill during 1900.	Total Number under treatment, 1900	Discharged to Homes.	Transferred to Parkhill.	Transferred to New Ferry.	Transferred to Netherfield Rd.	Remaining in Hospital, Dec. 31st, 1900.	Deaths.	Percentage of Deaths.
Smallpox .....	—	112	6	118	94	—	10	—	—	*14	12·5
Other Diseases.....	—	14	—	14	8	1	—	1	2	†2	14·2
Isolation .....	—	14	—	14	14	—	—	—	—	—	—
TOTALS... ..	—	140	6	146	116	1	10	1	2	16	11·4

\* 10 unvaccinated and 4 imperfectly vaccinated.

† One of these was a child of 10, who died two days after admission of Tubercular Laryngitis, and the other a child of 12, who died a week after admission of Broncho-Pneumonia, following Scarlatina.

SMALLPOX.

	AGE PERIODS.								Total.
	Under 5	5—10	10—20	20—30	30—40	40—50	50—60	Over 60	
No. of cases .....	6	3	26	40	16	11	10	6	118
No. of Deaths .....	2	—	3	4	2	—	3	—	14



CITY HOSPITAL, FAZAKERLEY.

Consulting Physician, DR. ROBERTS.  
Resident Physician, DR. W. M. MONTGOMERY.

Diseases.	Convalescent Cases admitted during 1900.	Total under treatment, 1900	Died during 1900.	Discharged to homes.	Transferred to Grafton Street.	Transferred to Netherfield Rd.	Transferred from Grafton Street.	Transferred from Nether- field Road.	Remaining in Hospital, 31st Dec., 1900.	Mortality per cent. on admissions.
Scarlet Fever.....	120	120	—	57	1	2	53	67	60	—
Totals .....	120	120	—	57	1	2	53	67	60	—

SCARLET FEVER.

	AGE PERIODS.		
	Under 5	5—10	10—20
No. of cases.....	60	41	19

Much anxiety was occasioned by the wide diffusion of plague throughout the world, the disease having found a lodgment in many ports with which Liverpool is commercially intimately connected. The precautions in connection with the Port were made more stringent (see report to the Port Sanitary Authority, 1900), but it was also necessary to concentrate attention upon the possibilities of overland importation.

The Medical and General Staff were increased; medical men were appointed to take note of trains leaving Glasgow, and also on their arrival in Liverpool from Glasgow.

The duties assigned to these gentlemen were to take note and report upon the general appearance of the passengers, cleanliness of the carriages, &c. The departure of ships' crews, more especially Lascars, was carefully noted. In the event of suspicious sickness having been found, the railway carriage would have at once been taken off for disinfection. The railway companies interested afforded every assistance to the officers of the Health Committee.

It was necessary to set aside wards for the accommodation of sick persons, this accommodation being in addition to that existing at the Port Hospital. The Health Committee also engaged the services of Dr. Balfour Stewart, whose large experience in plague rendered his services particularly valuable. Fortunately, no case of plague occurred within the City, although suspected persons were from time to time isolated for observation.

E. W. HOPE,

MEDICAL OFFICER OF HEALTH.

PUBLIC HEALTH DEPARTMENT,

MUNICIPAL OFFICES,

LIVERPOOL, *6th June*, 1901.



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# APPENDIX.

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CENSUS, &c.

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CENSUS.

The results of the Census taken on the 31st March, 1901, show that during the 10 years ending 1901, there has been an increase in the population of the City of Liverpool of 55,399.

The accompanying table indicates the extent to which changes in the numbers of the people have taken place, and it also shows the changes which had occurred during the previous intercensal period:—

(A) Changes during last intercensal period.  
Population.

DISTRICT.	1891. Census.	1901. Census.	Increase.	Decrease.
Scotland ... ..	53,713	52,992	...	721
Exchange ... ..	47,738	41,999	...	5,739
Abereromby ... ..	55,530	52,418	...	3,112
Everton ... ..	110,556	121,482	10,926	...
Kirkdale ... ..	66,131	69,381	3,250	...
West Derby—West ... ..	76,971	86,694	9,723	...
Toxteth ... ..	107,341	106,039	...	1,302
	517,980	531,005	23,899	10,874
Walton ... ..	40,304	54,605	14,301	...
West Derby—East ... ..	36,454	43,848	7,394	...
Wavertree... ..	13,764	25,303	11,539	...
Sefton Park ... .. (late Toxteth Rural)	21,046	30,186	9,140	...
	111,568	153,942	42,374	...
Total ... ..	629,548	684,947	66,273	10,874

Total Increase = 55,399.

(B) Changes during previous intercensal period.  
Population.

DISTRICT.	1881. Census.	1891. Census.	Increase.	Decrease.
Seotland ... ..	70,606	53,713	...	16,893
Exchange ... ..	72,007	47,738	...	24,269
Abereromby ... ..	67,551	55,530	...	12,021
Everton ... ..	109,812	110,556	744	...
Kirkdale ... ..	58,145	66,131	7,986	...
West Derby—West ... ..	67,727	76,971	9,244	...
Toxteth ... ..	106,660	107,341	681	...
	552,508	517,980	18,655	53,183
Walton ... ..	18,536	40,304	21,768	...
West Derby—East ... ..	31,778	36,454	4,676	...
Wavertree... ..	11,097	13,764	2,667	...
Sefton Park ... .. (late Toxteth Rural)	10,368	21,046	10,678	...
	71,779	111,568	39,789	...
Total ... ..	624,287	629,548	58,444	53,183

Total Increase = 5,261.

The following table indicates the changes which have taken place in the number of inhabited houses in each of the Districts of the City, also the changes which had occurred during the previous intercensal period.

(A) Changes during last intercensal period.  
Inhabited Houses.

DISTRICT.					1891.	1901.	Increase.	Decrease.
Scotland	...	...	...	...	9,061	8,581	...	480
Exchange	...	...	...	...	8,176	6,610	...	1,566
Abercromby	...	...	...	...	8,056	7,483	...	573
Everton	...	...	...	...	19,981	21,732	1,751	...
Kirkdale	...	...	...	...	11,368	12,037	669	...
West Derby—West	...	...	...	...	15,231	17,376	2,145	...
Toxteth	...	...	...	...	19,361	19,939	578	...
					91,234	93,758	5,143	2,619
Walton	...	...	...	...	7,344	10,108	2,764	...
West Derby—East	...	...	...	...	7,302	8,731	1,429	...
Wavertree...	...	...	...	...	2,641	5,388	2,747	...
Sefton Park (late Toxteth Rural)	...	...	...	...	3,852	5,590	1,738	...
					21,139	29,817	8,678	...
Total					112,373	123,575	13,821	2,619

Total Increase = 11,202.



(B) Changes during previous intercensal period.  
Inhabited Houses.

DISTRICT.						1881.	1891.	Increase.	Decrease.
Scotland	...	...	...	...	...	10,717	9,061	...	1,656
Exchange	...	...	...	...	...	11,301	8,176	...	3,125
Abercromby	...	...	...	...	...	9,616	8,056	...	1,560
Everton	...	...	...	...	...	19,133	19,981	848	...
Kirkdale	...	...	...	...	...	9,793	11,368	1,575	...
West Derby—West	...	...	...	...	...	12,752	15,231	2,479	...
Toxteth	...	...	...	...	...	18,995	19,361	366	...
						92,307	9,1234	5,268	6,341
Walton	...	...	...	...	...	3,032	7,344	4,312	...
West Derby—East	...	...	...	...	...	6,146	7,302	1,156	...
Wavertree...	...	...	...	...	...	2,050	2,641	591	...
Sefton Park (late Toxteth Rural)	...	...	...	...	...	1,682	3,852	2,170	...
						12,910	21,139	8,229	...
Total						105,217	112,373	13,497	6,341

Total Increase = 7,156.

Number of persons per inhabited house :—

1881	-	-	-	-	-	= 5·9
1891	-	-	-	-	-	= 5·6
1901	-	-	-	-	-	= 5·5

It will be noted that during the 10 years preceding 1891, whilst the increase in the suburban townships (since incorporated) was 39,789, only four of the City districts showed any increase at all, viz., Everton, Kirkdale, West Derby and Toxteth, the increase in these districts amounting to 18,655, but on the other hand, the three remaining districts, Scotland, Exchange, and Abercromby, show a decrease amounting to 53,183.

During the ten years ending 1891 the net gain in population over the entire City was 5,261.

The Census last taken shows that during the ten years ending 1901 the increase was more than 10 times as great as it was during the preceding ten years, identically the same areas being referred to in each case. Of the central districts, Everton shows the most marked increase; the increase in West Derby (West) is practically the same as it was during the ten years ending 1891. Perhaps the most noteworthy circumstance, however, is that the decrease in Scotland District has practically ceased, whilst that in Exchange and Abercromby have been markedly arrested. Toxteth shows a slight falling off.

A correct enumeration of the people involves much care and labour. In Liverpool considerable pains were taken for some time beforehand to ensure that the enumeration should be correct. The Superintendents and District Registrars spared no effort to effect this end. The enumerators, 512 in number, were carefully selected, and a large proportion of them was furnished by the staff of the School Board, the Select Vestry, the Boards of Guardians, the Health Committee, and other public Departments. Besides this, teachers of the Board Schools gave instruction to the elder scholars upon the objects of the Census and the way in which the papers should be filled up. The Liverpool Police and other public bodies also obtained information upon which a very correct forecast of the population was based. So far as Liverpool was concerned, the pains and care bestowed on taking the Census have made it as accurate as it could possibly be.

Accuracy in this matter is necessary for many reasons. The total population is the foundation upon which all figures relating to births, deaths, and the incidence of disease are based, and if this foundation is inaccurate, all deductions from the figures are worse than useless; but if it is fairly accurate it furnishes undoubtedly the simplest and most popular way in which the results of sanitary measures can be gauged.

There is no duty imposed upon the City Council which can compare in importance with the care of the health of the people; it is to promote this that the labours of Committees are directed, and that large sums of money are spent.

The recent Census of the City shows that this labour and expenditure have been followed by a reduction in the sick-rate, and by a reduction in the death-rate. The antecedent pages indicate the direction in which the health and comfort of the inhabitants have been promoted.

There is no reason to doubt that importance will always be attached to the returns relating to sickness and mortality, and it is absolutely essential in the interests of sanitary progress that the basis upon which these returns rest should be accurate. Unfortunately the Census is only taken once in ten years, and in the intervals the populations are guessed at by the Registrar-General by a process which again and again has resulted in the most hopeless mistakes. At the present time the health returns published from the Registrar-General's Office may be regarded as approximately correct, but there is no disguising the fact that for years past the returns issued by the Registrar-General's Department relating to Liverpool, and published far and wide, have been inaccurate and misleading, and so far as dependence has been placed upon them, their tendency has been not only to cripple and retard the sanitation of the City, but to affect prejudicially its commercial progress.

A few years antecedent to the intercensal period preceding the last one, there was an error in the Registrar-General's estimate of the population of the City of Liverpool, by an excess in round numbers of 100,000 people. The result of this was to make the sickness and mortality appear to be about 20 per cent. less than it actually was, and to obscure the necessity for active sanitary measures. Prior to the last Census the error was in the opposite direction, and amounted in round numbers to 50,000, making the sickness and mortality appear higher than they really were, and discounting the value of the sanitary operations carried on. In 1896 the Medical Officer first drew attention to the probability that the method followed by the Registrar-General in estimating the population of the City was again faulty. In successive years, as the reasons for this belief became stronger, the subject received a corresponding attention, and the Health Committee, in 1898, sought an interview with the representatives of the Registrar-General's Department upon this important subject. That Department, however, having regard to the near approach of the Census, felt that the matter might be left until then. Unfortunately, three days before the Census was taken, that is to say, three days before reliable information was to be obtained, the Registrar-General published his Annual Summary for 1900, basing his calculations upon the erroneous estimates alluded to, and basing a comparison to the detriment of Liverpool upon a mistaken estimate of no less than 30 per cent. This error formed the subject of an enquiry in the House of Commons.

The circumstance illustrates the necessity for a quinquennial census—a necessity emphasised by the resolutions of Statistical Societies familiar



with the question, but in the meantime every available means ought to be taken to ensure the accuracy of published figures, more especially in the directions of correcting estimates of population, which can very easily be done.

The following Table gives the Census Population, and Birth and Death Rates corrected on the revised figures of such of the large towns, in respect to which the information could be procured for 1900.

Town.							Census Population.	Birth Rate.	Death Rate.
Birmingham	...	...	...	...	...	...	522,182	32·7	21·0
Blackburn	...	...	...	...	...	...	127,527	27·0	22·2
Bolton	...	...	...	...	...	...	168,205	28·6	19·3
Brighton	...	...	...	...	...	...	123,478	23·8	18·0
Burnley	...	...	...	...	...	...	97,044	30·0	20·5
Cardiff	...	...	...	...	...	...	164,420	31·6	16·2
*Dublin	...	...	...	...	...	...	375,076	29·7	27·6
Edinburgh	...	...	...	...	...	...	316,443	26·3	17·4
Gateshead	...	...	...	...	...	...	109,887	36·6	19·2
*Glasgow	...	...	...	...	...	...	764,423	32·2	21·1
Hull	...	...	...	...	...	...	240,618	32·7	19·2
Leeds	...	...	...	...	...	...	428,953	30·8	20·2
Liverpool	...	...	...	...	...	...	684,947	33·4	23·1
Manchester	...	...	...	...	...	...	543,969	32·3	23·7
Newcastle	...	...	...	...	...	...	214,803	33·2	20·8
Nottingham	...	...	...	...	...	...	239,753	28·2	19·4
Oldham	...	...	...	...	...	...	137,238	27·1	22·0
Plymouth	...	...	...	...	...	...	107,509	26·7	19·9
Preston	...	...	...	...	...	...	112,982	30·1	23·3
Salford	...	...	...	...	...	...	220,956	33·2	25·2
Sheffield	...	...	...	...	...	...	380,717	33·4	22·0
Sunderland	...	...	...	...	...	...	146,565	36·2	21·7
Wolverhampton	...	...	...	...	...	...	94,179	31·9	21·2

\*Rates unrevised.



The following tables I, II, III, IV, and marked also A, B, C, D, are prepared pursuant to an instruction of the Local Government Board.

TABLE I.

YEAR.	Population estimated to Middle of each year.	BIRTHS.		DEATHS UNDER ONE YEAR OF AGE.		DEATHS AT ALL AGES. TOTAL.		DEATHS IN PUBLIC INSTITU- TIONS.	Deaths of non- residents register- ed in district.	Deaths of residents register- ed beyond district.	DEATHS AT ALL AGES. NETT.	
		Number.	Rate.*	Number.	Rate per 1000 Births regist'd.	Number.	Rate.*				Number.	Rate.*
1	2	3	4	5	6	7	8	9	10	11	12	13
1890.....	520466	17592	33·8	3438	195	14293	27·5	2352	336	195	14152	27·2
1891.....	518302	17832	34·4	3361	188	13911	26·8	2287	317	233	13827	26·6
1892.....	519590	17758	34·2	3209	181	12671	24·4	2130	283	214	12602	24·2
1893.....	520882	18328	35·2	3863	210	13919	26·7	2723	427	247	13739	26·3
1894.....	522178	17893	34·3	3210	179	12073	23·1	2663	434	250	11889	22·7
+1895.....	652523	22006	33·7	4441	202	16624	25·5	3441	409	...	16215	24·8
1896.....	658050	21943	33·3	3833	175	14476	22·0	3457	416	...	14060	21·4
1897.....	663633	22280	33·6	4488	201	15590	23·5	3604	473	...	15117	22·8
1898.....	669243	22227	33·2	4111	184	15380	23·0	3812	527	...	14853	22·2
1899.....	674912	22488	33·3	4481	199	16861	25·0	4278	592	7	16276	24·1
Averages for years 1890-1899.	591978	20034	33·8	3483	191	14579	24·6	3074	421	114	14273	24·1
1900.....	680628	22762	33·4	4247	186	16393	24·0	4257	616	8	15785	23·1

\* Rates calculated per 1000 of corrected population as per Census Returns of 1891 and 1901. + City Boundaries extended.

NOTE.—The deaths included in Column 7 of this Table are the whole of those registered during the year as having actually occurred within the City. The deaths included in Column 12 are the number in Column 7, corrected by the subtraction of the number in Column 10 and the addition of the number in Column 11.

TABLE II.

NAMES OF LOCALITIES.	1.—Scotland District.					2.—Exchange District.					3.—Abercromby District.					4.—Everton District.				
	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.
YEAR.																				
1890.....	54826	2088	2003	477	49175	1416	1858	321	56344	1603	1465	236	110500	3844	2891	706				
1891.....	53698	1984	1993	467	47585	1385	1803	292	55450	1627	1438	239	110796	4006	2770	764				
1892.....	53626	2057	1838	445	46980	1303	1701	300	55131	1596	1266	217	111610	4074	2440	712				
1893.....	53553	2027	1834	471	46382	1387	1688	325	54814	1691	1384	267	112672	4105	2957	910				
1894.....	53481	2041	1628	452	45792	1302	1495	298	54499	1671	1102	205	113673	4233	2410	690				
1895.....	53409	2144	1836	506	45209	1325	1670	314	54186	1676	1381	251	114074	4287	3059	858				
1896.....	53336	2053	1609	417	44634	1433	1451	291	53874	1740	1127	203	114964	4335	2697	778				
1897.....	53264	2122	1711	475	44065	1381	1495	348	53564	1711	1216	233	116534	4441	2875	902				
1898.....	53192	2111	1825	460	43505	1310	1557	316	53256	1633	1242	245	117647	4304	2729	807				
1899.....	53121	2125	1865	509	42951	1278	1634	314	52950	1695	1258	229	118940	4328	3143	880				
Averages of Years 1890 to 1899.	53550	2075	1814	467	45627	1352	1635	311	54406	1664	1287	232	114141	4195	2797	800				
1900.....	53049	2166	1830	521	42405	1332	1549	347	52645	1633	1303	252	120904	4442	2896	846				

NOTE.—Population of each district corrected as per Census Returns of 1891 and 1901.

TABLE II.—*continued.*

NAMES OF LOCALITIES.	5.—Kirkdale District.				6.—West Derby (West) District.				7.—Toxteth District.			
	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 Year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 Year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.
YEAR.	<i>a.</i>	<i>b.</i>	<i>c.</i>	<i>d.</i>	<i>a.</i>	<i>b.</i>	<i>c.</i>	<i>d.</i>	<i>a.</i>	<i>b.</i>	<i>c.</i>	<i>d.</i>
1890 .....	65896	2351	1602	465	76439	2673	1735	486	107286	3617	2514	649
1891 .....	66210	2446	1537	426	77200	2689	1657	432	107309	3695	2467	627
1892 .....	66529	2340	1330	351	78124	2829	1549	423	107178	3559	2335	622
1893 .....	66849	2479	1579	465	79059	2852	1791	566	107047	3787	2345	701
1894 .....	67170	2308	1317	391	80005	2894	1569	412	106916	3444	2118	602
1895 .....	67493	2411	1657	487	80207	2858	1918	536	106786	3746	2652	746
1896 .....	67818	2359	1333	400	81311	2950	1698	486	106655	3522	2231	550
1897 .....	68144	2423	1509	457	82434	3040	1827	557	106525	3527	2456	712
1898 .....	68472	2377	1368	408	83670	3099	1783	538	106396	3493	2308	626
1899 .....	68801	2361	1578	434	84907	3086	1841	566	106268	3545	2678	711
Averages of ) Years 1890 to 1899. )	67338	2385	1481	428	80335	2897	1736	500	106836	3593	2410	654
1900 .....	69132	2408	1552	470	85921	3019	1836	507	106393	3429	2496	681

NOTE.—Population of each district corrected as per Census Returns of 1891 and 1901.

B—*Continued.*



TABLE II.—*continued.*

NAMES OF LOCALITIES.	8.—Walton District.				9.—West Derby (East) District.				10.—Wavertree District.				11.—Sefton Park District (late Toxteth Rural).			
YEAR.	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.
1890.....	Statistics not available	1439	821	258	39431	1099	681	141	17830	405	245	63	24532	616	295	83
1891.....																
1892.....																
1893.....																
1894.....																
1895.....																
1896.....																
1897.....																
1898.....																
1899.....																
Averages of ) Years 1895 ) to 1899. )	48772	1571	778	232	40928	1020	684	158	20213	521	279	82	26401	629	316	80
1900.....	53376	1754	855	245	43245	1161	749	155	24174	820	396	115	29381	598	315	63

NOTE.—Population of each district corrected as per Census Returns of 1891 and 1901.



TABLE  
Cases of Infectious Disease

NOTIFIABLE DISEASE.	CASES NOTIFIED IN WHOLE DISTRICT.	TOTAL CASES NOTIFIED IN EACH LOCALITY.										
	At all Ages.	Scotland.	Exchange.	Abercromby.	Everton.	Kirkdale.	West Derby (West).	Toxteth.	Walton.	West Derby (East).	Wavertree.	Sefton Park (late Toxteth Rural).
					(H)			(H-H)	(H)	(H)		
Small-pox .....	156	4	2	6	5	26	4	6	42	10	...	1
Cholera .....	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria .....	669	23	25	46	138	47	105	102	62	36	28	20
Membranous croup .....	40	2	2	3	11	6	7	2	3	3	1	...
Erysipelas .....	1088	117	106	103	202	82	107	226	59	28	20	18
Scarlet fever .....	1968	78	79	58	406	196	291	310	179	141	69	97
Typhus fever.....	42	2	1	...	1	4	2	29	...	...	...	...
Enteric fever.....	731	71	38	53	129	58	94	84	84	46	15	25
Relapsing fever.....	1	...	...	...	...	...	1	...	...	...	...	...
Continued fever .....	28	4	2	8	2	...	1	7	...	1	1	2
Puerperal fever.....	55	5	...	2	16	7	11	5	4	1	1	2
Plague .....	...	...	...	...	...	...	...	...	...	...	...	...
Totals .....	4778	306	255	279	910	426	623	771	433	266	135	165

(H) The localities in which the

III.  
notified during the Year 1900.

	(Workhouses and Hospitals).	Emigrants, Seamen, &c., passing through the City.	No. of Cases removed to Hospital from each Locality.										Public Institutions (Workhouses and Hospitals).	Emigrants, Seamen, &c., passing through the City.
			Scotland.	Exchange.	Abereromby.	Everton.	Kirkdale.	West Derby (West).	Toxteth.	Walton.	West Derby (East).	Wavertree.	Seiton Park (late Toxteth Rural).	
24	26	4	2	6	5	26	4	6	41	10	...	1	24	25
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	5	11	13	31	73	18	51	44	20	8	5	3	24	5
...	...	...	...	...	...	3	...	2	...	1	...	...	...	...
16	4	...	...	...	...	...	...	...	...	...	...	...	...	...
58	6	61	58	28	231	124	200	190	81	81	43	42	53	6
1	2	2	1	...	1	4	2	28	...	...	...	...	1	2
9	25	31	14	20	71	24	45	34	47	13	7	3	1	17
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	1	1	4	...	...	...	1	...	...	...	...	...	...
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
141	68	110	89	89	381	199	302	305	189	113	55	49	103	55

Isolation Hospitals are situated.

TABLE

Causes of, and ages at,

CAUSES OF DEATH.	DEATHS IN WHOLE DISTRICT AT SUBJOINED AGES.						
	All ages.	Under 1.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 60.	60 and up- wards.
Small-pox .....	17	1	2	2	4	8	...
Measles .....	145	26	113	6	...	...	...
Scarlet fever .....	111	3	72	33	2	1	...
Whooping-cough .....	534	202	308	24	...	...	...
Diphtheria and membranous croup	162	11	103	44	3	1	...
Croup .....	20	4	13	2	1	...	...
Fever {	Typhus .....	11	...	1	3	2	5
	Enteric .....	111	...	5	10	31	62
	Other continued .....	4	...	2	1	...	1
Epidemic influenza .....	242	11	8	2	11	117	93
Cholera .....	...	...	...	...	...	...	...
Plague .....	...	...	...	...	...	...	...
Diarrhœa .....	922	679	188	5	2	15	33
Enteritis .....	391	236	87	8	3	23	34
Puerperal fever.....	22	...	...	...	6	16	...
Erysipelas .....	35	10	1	...	2	15	7
Other septic diseases .....	15	3	1	...	3	6	2
Phthisis .....	1229	6	18	44	194	897	70
Other tubercular diseases .....	415	112	148	72	22	54	7
Cancer, malignant disease .....	489	...	2	...	6	293	188
Bronchitis .....	2029	426	204	22	13	601	763
Pneumonia .....	1433	251	294	63	69	569	187
Pleurisy .....	65	1	6	6	3	38	11
Other diseases of Respiratory organs	228	45	48	10	7	83	35
Alcoholism and Cirrhosis of liver...	126	...	...	...	1	101	24
Venereal diseases .....	56	42	5	1	...	7	1
Premature birth .....	457	457	...	...	...	...	...
Diseases and accidents of partruition	43	...	...	...	10	33	...
Heart diseases .....	1061	1	3	29	62	545	421
Accidents .....	542	123	73	57	28	179	82
Suicides .....	46	...	...	...	7	32	7
All other causes .....	4824	1553	441	177	116	1253	1284
All causes .....	15,785	4203	2146	621	608	4955	3252

NOTE.—(a) The deaths of residents occurring beyond the limits of the City have been included in the total.

(b) Deaths of residents occurring in public institutions from Zymotic and Tubercular diseases have been included in the total, but are not classed under Public Institutions.

(c) Under the heading of Diarrhœa, deaths certified as from Epidemic Enteritis, Choleraic Diarrhœa, Cholera, and Cholera Nostras have been included.

IV.

Death during Year 1900.

DEATHS IN LOCALITIES (AT ALL AGES).											DEATHS IN PUBLIC INSTI- TUTIONS.
Scotland	Ex- change.	Aber- cromby	Ever- ton.	Kirkdale	West Derby, West.	Toxteth.	Walton.	West Derby. East.	Waver- tree.	Sefton Park.	
2	...	2	...	2	1	1	7	1	...	1	16
16	10	6	27	26	17	18	18	3	3	1	25
12	6	2	39	13	13	14	6	1	3	2	74
97	52	20	129	50	57	79	15	20	12	3	21
8	9	12	37	11	22	37	16	4	4	2	56
1	1	...	4	1	1	7	4	...	1	...	...
2	...	1	...	...	1	7	...	...	...	...	10
8	6	14	20	8	11	17	13	11	1	2	63
1	...	...	1	...	...	1	...	...	...	1	...
19	16	26	28	16	36	47	23	17	9	5	19
...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...
141	71	36	182	129	115	130	53	31	26	8	19
41	19	26	85	29	37	70	10	17	7	10	40
...	1	2	7	2	6	3	...	...	1	...	4
3	5	1	8	3	3	6	...	2	1	3	9
1	1	...	...	2	...	2	1	...	...	...	8
122	167	143	218	86	158	178	55	57	25	20	480
46	43	36	76	34	54	49	31	19	17	10	89
19	13	23	53	34	45	58	23	33	15	26	147
207	132	135	315	152	159	292	71	79	49	20	418
112	103	67	193	129	151	201	65	48	32	28	304
3	4	5	6	3	6	3	3	2	1	2	27
31	11	6	42	39	22	29	7	8	4	6	23
3	5	12	18	6	13	18	2	6	4	3	36
7	11	3	8	3	6	5	2	1	...	...	10
33	22	18	103	53	61	68	22	33	17	12	15
2	1	3	5	5	6	10	1	2	...	3	5
54	71	68	115	91	68	95	42	49	25	24	359
59	42	19	59	29	21	50	13	10	...	4	236
3	3	4	5	2	2	3	1	4	2	1	16
377	264	290	676	370	481	609	256	192	101	96	1112
1430	1089	980	2459	1328	1573	2107	760	650	360	293	3641

this table, and deaths of non-residents occurring in the City have been excluded.

Diseases have been allotted to the respective localities from whence they came, in addition to being

Zymotic Enteritis, Epidemic Diarrhœa, Summer Diarrhœa, Dysentery, and Dysenteric Diarrhœa,







DEATHS REGISTERED IN THE CITY OF LIVERPOOL  
DURING THE YEAR ENDING SATURDAY, 29<sup>TH</sup> DECEMBER, 1900.

[illegible]





# CITY OF LIVERPOOL

Diagram showing Birth Rate (blue) ... } Per 1000  
 " " Death Rate (black)... } of the  
 " " Number of Deaths of Infants under one year } Population.  
 out of every 1000 born (green)... } in each of the  
 " " estimated Population per acre, excluding } Districts of the  
 Docks, Quays, &c. (red) ... } City during 1900

WEST DERBY - EAST

26.9  
17.3  
134  
14.5

WAVERTREE

33.9  
16.4  
140  
13.2

WALTON

32.9  
16.0  
140  
28.0

WEST DERBY - WEST

35.1  
21.4  
168  
127.5

SEFTON PARK  
(LATE TOXTETH - RURAL)

20.4  
10.7  
105  
22.7

EVERTON

36.7  
23.9  
190  
174.5

EXCHANGE COMPRISES -

VAUXHALL WARD  
EXCHANGE "  
ST ANNE'S "

ABERCROMBY COMPRISES -

CASTLE STREET WARD  
ST PETER'S "  
GREAT GEORGE "  
ABERCROMBY "

KIRKDALE

34.8  
22.4  
195  
97.9

TOXTETH

32.2  
23.5  
199  
122.7

ABERCROMBY

31.0  
24.7  
154  
78.1

SCOTLAND

40.8  
34.5  
241  
135.3

EXCHANGE

31.4  
36.5  
260  
89.8

1900

Birth Rate for whole City ... 33.4

Death Rate ... 23.1

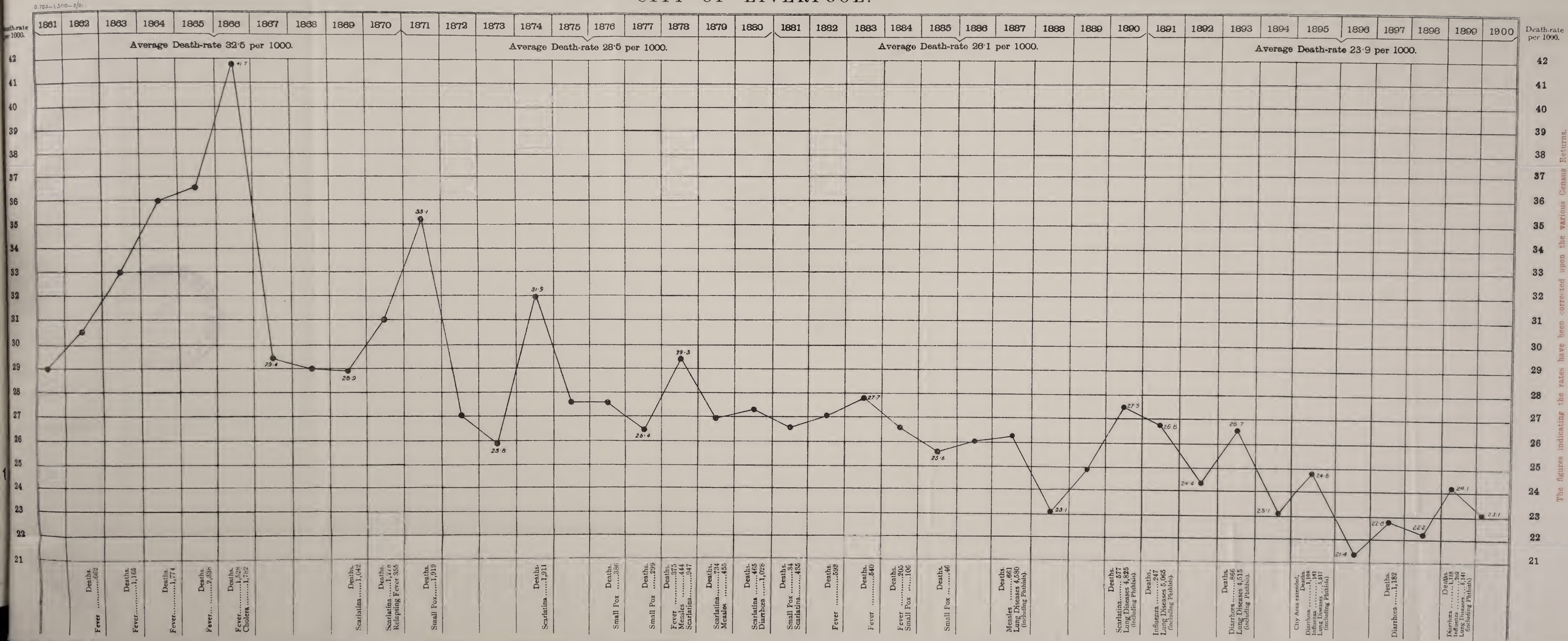
R I V E R M E R S E Y



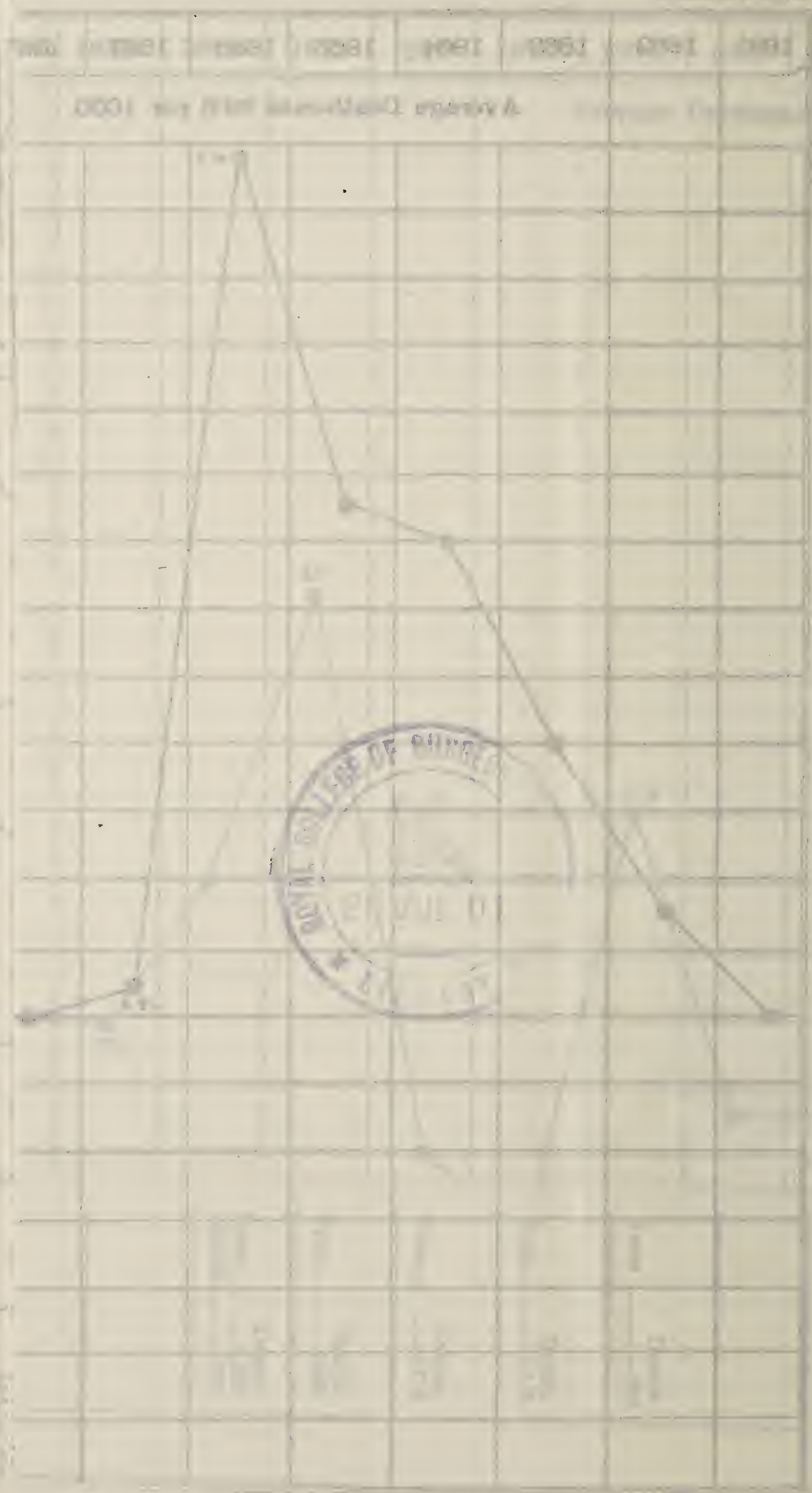




CITY OF LIVERPOOL.









# PHILIPS' NEW PLAN OF GREATER LIVERPOOL

*Indicating Districts referred to in Report.*

SCALE OF ONE MILE.

*The Map is divided into half-mile squares.*



## DISTRICTS.

1. SCOTLAND
2. EXCHANGE
3. ABERCROMBY
4. EVERTON
5. KIRKDALE
6. WEST DERBY—WEST
7. TOXTETH
8. WALTON
9. WEST DERBY—EAST
10. WAVERTREE
11. SEFTON PARK  
(LATE TOXTETH—RURAL)



# GREATER

